APRIL, 1957

# American Engineer

## IN THIS ISSUE . . .

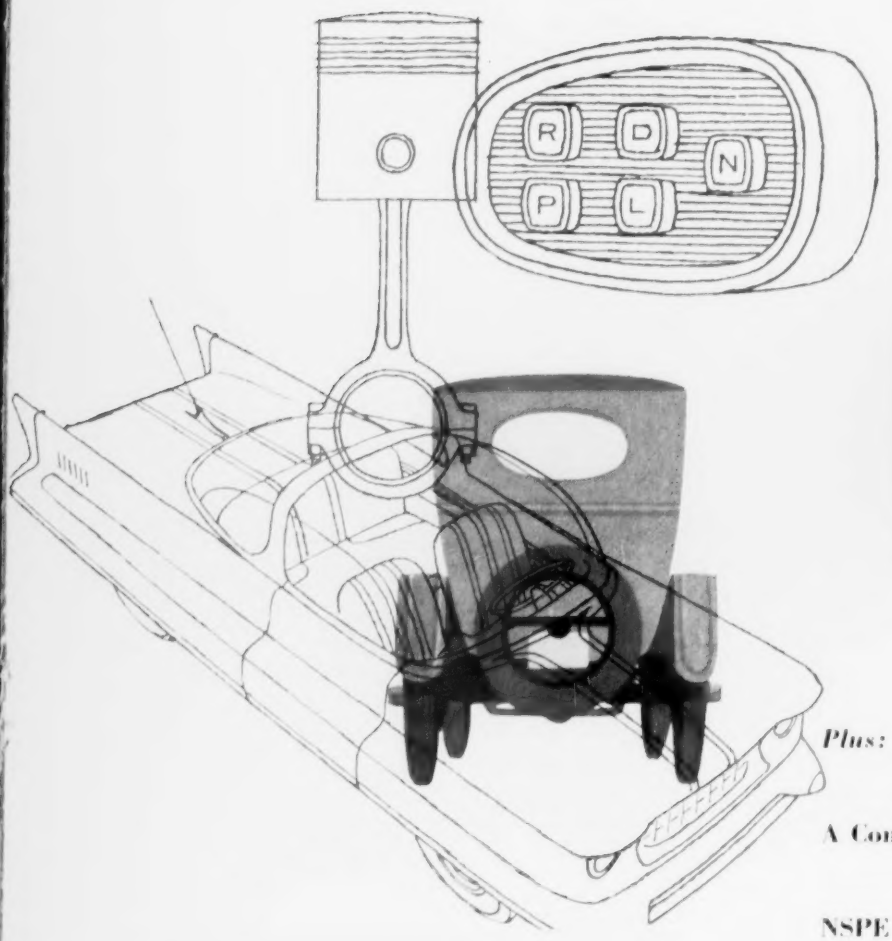
● The Engineer's Hard Job Of Making Life Easier

By

EDWARD N. COLE

*General Manager, Chevrolet Motors Div., General Motors Corporation*

Mr. Cole




*Plus:* Engineers, Money and Management by John Moxon ●

A Complete Roundup of 1957 Engineer's Week News ●

NSPE Testimony on Wage-Hour Act ●

Announce Plans for Meeting in Dallas ●

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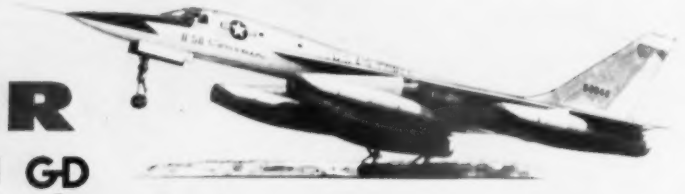

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*"He who has more knowledge than judgment is made for another man's use more than his own."*

—William Penn

•

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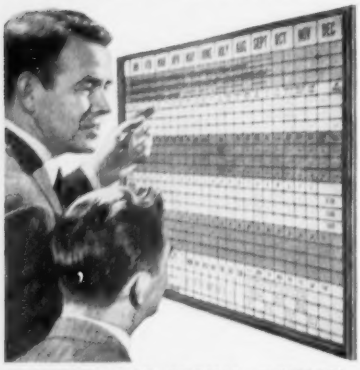

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# *Letters to the Editor*

## *No Union P.E.'s? . . .*

Dear Editor:

Much has been said pro and con on the subject of unionization of engineers. Without entering the argument, we believe that we can safely say that *unionization* is not compatible with *professionalism*. This being the case, the NSPE should bar membership to union members, and further should work toward having the various state registration laws changed to automatically suspend an engineer's license during such period of time that he belongs to an engineer's union.

Admittedly this course of action will have little effect on the unionization of engineers; however, that is not the purpose of our suggestion. Our aim is to further delineate the difference between the professional engineer and the purely technical engineer and so further the cause of professional recognition.

A. A. SACKLER, P.E., and
J. I. DAVIS, P.E.,
Stamford, Conn.

## *Foreign Aid . . .*

Dear Editor:

In regard to the piece, "Foreign Industrial Development — *Late* 20th Century Model," by fellow engineer Ray C. Burrus in the Feburary number: the International Finance Corporation intends to see that the money of the people of the United States be not loaned nor given to the people of another Government, but instead be loaned and given to private industrialists in other countries.

The reason for this action is given as that The American Way of Life is competitive private enterprise in a free economy. It is true this country was built by free competition which resulted in efficient and economical industrial production at prices continually lowered with the resulting greater sales.

But now producers, who see greater profits by holding and increasing prices, unite to destroy the competition by lowering prices; the competition continues to the extent that more efficient organizations and machines are employed.

This competition (other than price) will result in unemployment and reduction in purchasing power of the people. The government vainly tries to prevent price fixing.

The IFC says that the path to sound economic industrialization in foreign areas is by the employment of private capital; yet at the same time it proposes that the 178 million of our American society (the people of the U.S.A.) be used to finance industrial developments who will enter world competition.

Who are these private industrialists to receive our money? If they are natives of those backward countries, of course they lack the experience of our industrialists! Or if they are our industrialists, operating in foreign fields, why are they to have United States public funds?

The reason the IFC is no longer going to help a foreign country finance its own industrial economy they say is because The American Way is for industry to build upon private capital.

Why is our money to be sent over to foreign countries? The object is to try to make those peoples live and think like Americans! But at the same time all individuals in the United States do not think alike!

In fact the IFC thinks in two opposite ways at the same time: (1) Free competition of those who invest and control their own money, is the only way. (2) The public money of the people of the United States, passed on by the IFC, used by private industrialists, is the way.

The IFC is an agent of government, a branch of the social-economic life of the citizens. What it does should be for the collective good of all, and not for the profit of a few!

D. W. BLAKESLEE, P.E.,
Pittsburgh, Pa.

## *On Public Works . . .*

Dear Editor:

In reading through the January issue of the AMERICAN ENGINEER, I was particularly interested in the remarks of Milton Lunch, NSPE's legislative analyst, on "Public Works Planning" on page 15, and would like to keep abreast of General Bragdon's activities as Special Assistant to the President for Coordination of Public Works Planning.

I wholeheartedly agree with NSPE that there is a real need for a special agency at cabinet level to handle and supervise the coordination of all Federal public works activities, particularly as these affect the future land development patterns of our metropolitan area.

LESLIE WILLIAMS, P.E.,
Philadelphia, Pa.

## *A National Disgrace . . .*

Dear Editor:

Reports from many sources and the daily press still indicate a desperate lack of qualified people in various professions. We need at least forty thousand engineers a year to fill the jobs in this extensive field, and only one half that many are graduating from

*(Continued on page 48)*


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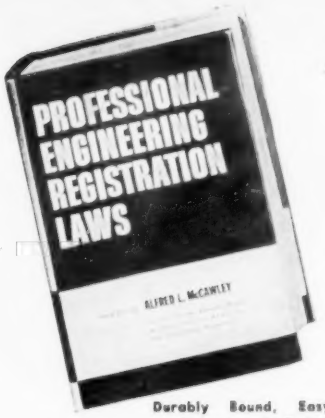


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The *Criteria for Professional Employment of Engineers* has now been published in booklet form and is being circulated widely to management, government officials, educators, associations and other groups. It is equally important that individual professional engineers be familiar with the content of the new publication.

The major purpose of the *Criteria* is perhaps best summarized by the continuing language from the introduction:

"As most engineers are employees, professional recognition is most significant in its application to the employed engineer-employer relationship. The professional status of the employed engineer, in all of its manifold aspects, needs to be fully recognized by the employed engineer and his employer if full and complete professional growth of the engineering profession is to be developed."

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  - **Engineering Titles**
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  - **Termination Policies**

*Criteria for Individual Engineers*

- **Application for Employment Interview**
- **Indoctrination**
- **Technical Development of the Individual**
- **Administrative Development of the Individual**
- **Professional Development of the Individual**
- **Personality Development of the Individual**
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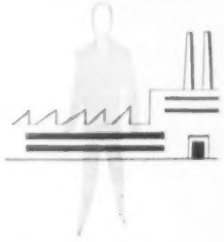

Appearing after more than a year of intensive research and study, this book is a major publication in the engineering-industry field. Brought together in compact form are a wealth of pertinent facts about the background and present situation bearing on the future professional development of engineers employed in all types of industry, and the related effects on all other professional engineers. 128 pages • 6 illustrative charts • 11 tables of economic data • fully documented by more than 250 references • bibliography and index.

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# PROFESSIONAL NEWS IN CAPSULE FORM

*A Roundup of Late Events for Professional Engineers*

### *SWE Gives Annual Award To Mrs. Rebecca Sparling*

The annual award of the Society of Women Engineers, made to a woman who makes an outstanding contribution to engineering, was presented to Mrs. Rebecca Hall Sparling, of Pomona, Calif., during the recent national convention of SWE in Houston, Texas.

A registered professional engineer, Mrs. Sparling is presently employed in the Engineering Department of Convair, a division of General Dynamics, at Pomona, where she is concerned with new developments in materials and processes for the Navy.

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### *Construction Course Planned By Wentworth*

To meet the demand of road builders whose need for road construction personnel has surged since the start of $100 billion federal-state highway program, the first educational course for the training of civil and highway construction technicians in New England will be inaugurated at Wentworth Institute beginning September, 1957.

The announcement was made by H. Russell Beatty, president of the Wentworth Institute, at a meeting held at the Institute with ex-Federal Road Administrator John A. Volpe, also a director of Wentworth; Carl A. Sheridan, Mass. commissioner of public works; Alan M. Thompson, asst. treasurer, N. E. Road Builders Assn.; and Andrew Canzanelli, former MDC engineer, who will be in charge of the course.

The course was inaugurated as a result of a survey conducted by Wentworth of New England Road Building Assn. and commissioners of public works in the New England states and leading cities in the six-state region.

"I have a new motto, Sedgewick! 'If you can't join 'em, lick 'em!'"

### *Lt. Col. Alvin F. Meyer Heads Sanitary Engineers*

Results of balloting for officers of the 1957-58 Conference of Federal Sanitary Engineers has been announced by the Tellers Committee.

President-elect is Lt. Col. Alvin F. Meyer, Jr., U. S. Air Force; secretary-treasurer is Harry A. Faber, U. S. Public Health Service, and directors are Martin F. Kunkel, Housing and Home Finance Agency, Joseph Flanagan, Public Health Service, and David A. Kendall, U. S. Navy.

Serving on the Tellers Committee were Michael J. Blew, NSPE field membership representative, Frank A. Butrico, and Edward S. Wilbarger, Jr.

### *Dr. Anatole R. Gruehr Elected Fellow In AIEE*

Dr. Anatole R. Gruehr, professor and head of the Department of Economics and History at the Polytechnic Institute of Brooklyn, has been honored with election as a Fellow of the American Institute of Electrical Engineers.

Outstanding in national engineering societies and an authority on the economics of engineering projects, Dr. Gruehr was elected a Fellow of the AIEE in recognition of his "application of economic theory to engineering design."

This past summer Dr. Gruehr was elected chairman of two newly created units of national engineering societies. In NSPE he heads the new Committee on Engineering Preparation and in the American Society for Engineering Education he is the first chairman of the new Engineering Economy Division.

A past president of the New York Chapter of the NYSSPE, Dr. Gruehr is a State zone director and a national director of the National Society. From 1953 to 1956 he was national chairman of the annual Engineers' Week Committee.

### *Engineers Conference At Ohio State, May 3*

The fourth annual conference for engineers and architects (ACE), sponsored by the College of Engineering at Ohio State University, is scheduled for May 3 on the Ohio State campus. Engineering Dean Gordon B. Carson has announced.

Dr. Philip Sporn, president of the American Gas and Electric Service Corp., will be the keynote speaker at the general session. Dr. Sporn, a distinguished engineer, executive and administrator, is a pioneer in the advancement of practices in electric-power generation, transmission and distribution — including the applications of nuclear energy.

Luncheon session speaker will be Dr. Emanuel R. Piore, director of research for the International Business Machines Corp. and outstanding physicist and research administrator. He was formerly chief scientist for the Office of Naval Research.

The conference is expected to attract about 1,000 engineers and architects from all over the country, surpassing last year's attendance of more than 800 from twenty-one states.

Objectives of the conference are to "bring alumni, faculty, and students of the College of Engineering together with engineers from industries in order to strengthen the mutual relationship of these groups," and "provide a medium of continued education for engineers," according to Dean Carson.

❁

### *Petroleum Engineers Organization Renamed*

The Society of Petroleum Engineers of AIME has emerged as the new name of the established organization for professional engineers in the oil industry.

By action of the board of directors of the American Institute of Mining, Metallurgical and Petroleum Engineers, at the annual meeting in New Orleans, the three branches have been renamed to denote the professional status of the membership in the industries they represent.

In addition to the Society of Petroleum Engineers, the new titles of the former branches of the 87-year-old Institute are Society of Mining Engineers of AIME, and Metallurgical Society of AIME.

To the oil industry, the development gave new emphasis to the rapidly growing importance of engineering.

### *J. William Hinkley Heads Research Corporation*

J. William Hinkley has been elected president and chief executive officer of Research Corporation, succeeding Joseph W. Barker. Mr. Barker will continue as chairman of the board.

Research Corporation is a non-profit foundation founded in 1912 to support scientific research in colleges, universities and scientific institutions. Its income is derived from the administration of inventions made in colleges and universities throughout the country and from its subsidiary, Research-Cottrell, Inc.

Mr. Barker has been president and board chairman since 1946. From 1930 to 1946 he was dean of engineering at Columbia University and served as a special assistant to the Secretary of the Navy from 1941 to 1945. During 1956 he was president of the American Society of Mechanical Engineers.

❁

### *1956 Lamme Gold Medal Awarded To Beverage*

One of radio's outstanding pioneer scientists and engineers, Dr. Harold H. Beverage, vice president of the Radio Corporation of America and director of the RCA Laboratories, has been awarded the 1956 Lamme Gold Medal by the American Institute of Electrical Engineers, it has been announced by C. W. Franklin, chairman of the AIEE Lamme Medal Committee. Presentation of the Medal will be at the summer general meeting of AIEE in Montreal June 24.

Dr. Beverage, twenty-ninth recipient of the medal, was awarded it "for his pioneering and outstanding engineering achievements in the conception and application of principles basic to progress in national and world-wide radio communications."

**APRIL**
**MEETINGS OF NOTE**

**American Rocket Society** — Spring Meeting, April 3-5, Washington, D. C.

**American Chemical Society**—National Meeting, April 7-12, Municipal Auditorium, Miami, Fla.

**American Society of Mechanical Engineers**—Spring Meeting, April 8-10, Dinkler-Tutwiler Hotel, Birmingham, Ala.

**Building Research Institute**—Annual Meeting, April 15-17, Drake Hotel, Chicago, Ill.

**American Society of Lubrication Engineers** — Annual Meeting, April 15-17, Sheraton-Cadillac Hotel, Detroit, Mich.

**Institute of Radio Engineers**—Annual Spring TV Conference, April 26-27, Engineering Society Building, Cincinnati, Ohio.

**Association of Iron and Steel Engineers**—Spring Conference, April 29-May 1, Hilton Plaza Hotel, Cincinnati, Ohio.

**Society of Motion Picture and Television Engineers**—Semi-Annual Convention, April 28-May 3, Convention Hall, Philadelphia, Pa.

### *ASME Schedules Spring Meeting In Birmingham*

Rocket motors, engineering education, problems of improving industrial production and other problems currently facing engineers will be discussed at the Spring Meeting of the American Society of Mechanical Engineers at Birmingham, Alabama, April 8-10.

Technical sessions at the Dinkler Tutwiler Hotel will be preceded by a special two-day program for engineering students beginning April 5. More than twenty-five papers will be presented. The meeting will be followed by a tour of nearby Redstone Arsenal, a key U. S. missile development center.

In addition to technical papers, three speakers will address the group. William F. Ryan, president of ASME and a member of the National Society, will speak on problems facing the profession at noon on April 8.

Another feature event of the program is a banquet on the evening of April 9 at which D. J. L. Brakefield, director of public relations of the Liberty National Life Insurance Company of Birmingham, will speak on "The Sixth Factor in American Business."

❁

### *Dean Joseph Weil Directs Instrumentation Meeting*

Dean Joseph Weil, College of Engineering, University of Florida, has been named director of the National Nuclear Instrumentation Conference and Third Southeastern Exhibit in Atlanta, Georgia, April 10-12. The meeting is sponsored by the Instrument Society of America, the national technical society devoted to instrumentation in all fields, and covers the six southwestern states, Alabama, Georgia, North Carolina, South Carolina, Florida and Tennessee.

The three-day program will combine exhibits by leading manufacturers in the field of instrumentation and automatic controls with outstanding conference sessions. The conference is expected to draw nationally, and even internationally, to its program of instrumentation covering all phases of nuclear activities. Papers will include sessions on instrumentation of nuclear power plants, several types of reactors, manufacture of nuclear fuels, unclassified military applications, radiation measurement, as well as application of nuclear instruments to industrial requirements.

### *2nd Design Engineering Conference Set In May*

Thirty-three speakers, drawn from the top levels of the nation's design engineers, will lead discussions at the second Design Engineering Conference when it is held at the New York Coliseum in May.

The conference is being held in conjunction with the second Design Engineering Show and will run for three days, May 20-22, while the show will run for four, May 20-23. The show is produced by Clapp & Poliak, Inc., New York exposition management firm, and the conference is sponsored by the machine design division of the American Society of Mechanical Engineers.

William F. Ryan, ASME president, and vice president and senior consulting engineer, Stone & Webster Engineering Corp., Boston, will deliver the principal address at a banquet at the Hotel Sheraton Astor, on May 23.

Conference sessions will consider such problems as procedures in developing new designs, and the electrical, materials and mechanical aspects of design engineering. Considerable emphasis will be placed on designing in relation to automation and automatic processes.

The show, one of the most phenomenal in the industrial exposition field, will be among the five largest annual industrial expositions of 1957.



### *Building Association Elects Courter Pres.*

Joseph A. Courter, an NSPE member, was elected president of the Building Trades Employers' Association of New York City at the Association's annual meeting. Mr. Courter, who heads his own firm, Courter & Company, mechanical contractors, had served three years as vice president, and succeeds William B. F. Drew as president of the BTEA, an Association of 1,000 building contractors founded in 1903.

A graduate of Newark College of Engineering, Mr. Courter is president of the Engineers Club of New York City; president of the Mechanical Contractors Association of New York, Inc.; a former president of the N. Y. State Association of Mechanical Contractors, and recently was appointed to the board of directors of the Better Heating-Cooling Council, a national industry-wide promotional group organized last year. He represents the Mechanical Contractors Association of America, Inc., on the council board.

### *ASTM Holds Extensive Committee Meetings*

Thirty-five of the American Society for Testing Material's technical committees held about 300 committee and subcommittee meetings at the Society's annual Committee Week at the Benjamin Franklin Hotel, Philadelphia recently. During the five days of meetings, 1311 technical men registered for intensive work in committees discussing and correlating the great amount of research upon which ASTM specifications and methods of test are based.

The committees put into final shape new and revised tentatives and standards which will be recommended to the Society for adoption at its annual meeting at Atlantic City in June. In most cases, committee actions will be submitted to letter ballot of the committee prior to being submitted to the Society for action at the annual meeting.

### *Dr. Vannevar Bush Is Elected MIT Chairman*

Dr. Vannevar Bush, atomic scientist, has been elected chairman of the corporation of the Massachusetts Institute of Technology.

Dr. Bush has served at various times as Professor, Dean of Engineering and vice president of the M.I.T. In World War II he was director of the Office of Scientific Research and Development and the first chairman of the postwar Research and Development Board.

### *Dr. David B. Steinman Honored at U. of Florida*

The University of Florida conferred the latest of a long list of honors on Dr. David B. Steinman when the College of Engineering dedicated Steinman Lounge, for its faculty, on March 11 in the Engineering and Industries Building in Gainesville.

Magnificent photo murals on the spacious lounge walls form a montage of a few of the more than 400 bridges Dr. Steinman has designed or built on more than five continents. These are interspersed with his poetry eulogizing the beauty of steel and suspension bridges. One wall represents another facet of the master bridge builder's versatility, showing the garden at his Miami home with Dr. and Mrs. Steinman in the midst of their flowers.

### *Arc Welding Foundation Plans New Competition*

The James F. Lincoln Arc Welding Foundation, of Cleveland, Ohio, has announced a new bridge design competition offering a total of $50,000 in awards for designs of welded highway bridges. The awards will be made to the best designs submitted for highway bridges that are or could become a part of the National System of Interstate and Defense Highways.

Any type of bridge either built or proposed can be submitted so long as it conforms to the general requirements of the Interstate and Defense Highway System. A total of sixteen awards will be made with a top award of $10,000. Designs will be judged on quality of detail, economy in material and labor, cost savings, and appearance.

Information on the presentation of entries may be obtained from The James F. Lincoln Arc Welding Foundation, Cleveland 17, Ohio.



### *Hickernell Nominated As Treasurer of AIEE*

L. F. Hickernell, of Dobbs Ferry, N. Y., chief engineer, Anaconda Wire & Cable Company, Hastings-on-the-Hudson, long active in the American Institute of Electrical Engineers, has been nominated to be treasurer of that organization.

Mr. Hickernell, who presently is a director of AIEE and chairman of the Committee on Planning and Coordination, is unopposed for the office. He will succeed Walter J. Barrett who has been nominated to be 1957-58 president of the Institute.

### *Chemical Progress Week Scheduled for April 8-12*

The fourth annual Chemical Progress Week has been scheduled for April 8-12, 1957, it has been announced here by the Manufacturing Chemists' Association, sponsor of the event.

"The purpose of our program," said General John E. Hull, USA (Ret.), MCA president, "is to bring home to the American people the significance of the products of chemistry in their daily life. This year we will continue to stress the importance of interesting young men and women in careers in science. In addition, we plan to explain the importance of industrial research."

### *Oil Burning Conference Slated at NYU in April*

A national conference on oil burning and its equipment will be held at the New York University College of Engineering on April 15, 16, and 17. Authorities from industry and education will cover topics ranging from air pollution to chemical additives for fuel.

The conference, sponsored by the Oil Heat Institute of America and the mechanical engineering department at NYU, will be held in the Gould Student Center on the University Heights campus in the Bronx. Inquiries should be addressed to the Oil Heat Institute of America, 500 Fifth Avenue, New York 36, New York.

Some 300 engineers, architects, and others are expected to attend the meeting. Dean Thorndike Saville of the College of Engineering will welcome the conferees.

Dr. Bernard Shaffer, associate professor of mechanical engineering, is in charge of the arrangements at NYU.

### *Building Conference Scheduled in Florida*

A searching new look at present and future problems and practices in residential building will be undertaken by eighteen outstanding architects and planners in a special conference at Boca Raton, Fla., April 10, 11, and 12.

Sponsored by Aluminum Company of America, the first Alcoa Creative Conference on Housing will utilize current residential problems of design, distribution, and construction as a foundation from which to explore new methods and techniques to improve future home building in the United States.

Pietro Belluschi, dean of architecture at Massachusetts Institute of Technology, will serve as conference chairman.

Participants include such well-known authorities as Craig Ellwood, James Lendrum, O'Neil Ford, Minoru Yamasaki, Edward D. Stone, Hugh Stubbins, Raphael Soriano, and Louis Kahn.

Wallace Harrison, Charles M. Goodman, Harris Armstrong, James W. Rouse, Leonard Haeger, Max Abramovitz, Elmer Queer, Peter Blake, and Carl Koch will also be present.


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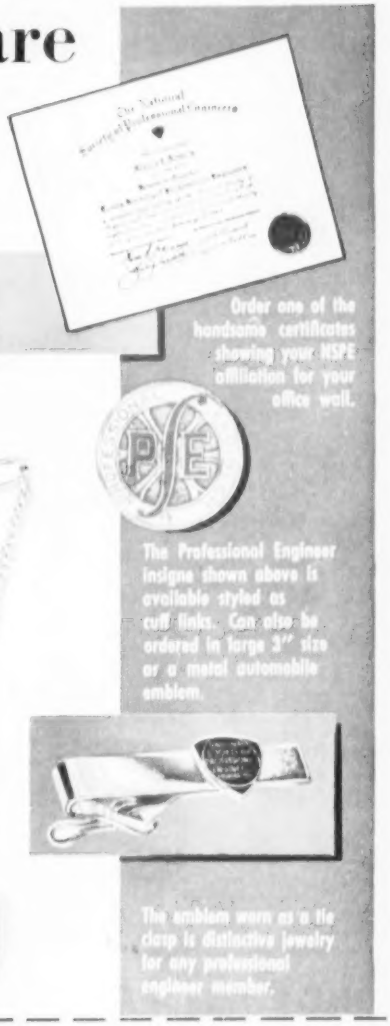

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VOLUME TWENTY-SEVEN NUMBER FOUR

• *An American Engineer Photo Story* •

# The Engineer's Hard Job of Making Life Easier

By

EDWARD N. COLE,

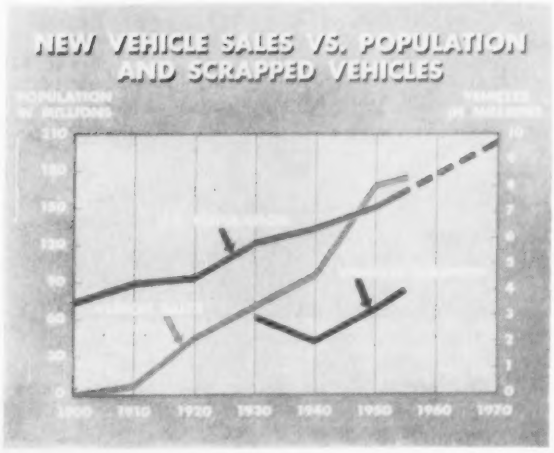
*General Manager, Chevrolet Motor Division, General Motors Corporation*

THE title of this photo story, "The Engineer's Hard Job of Making Life Easier," may seem contradictory. Because of the many labor saving devices now available to the engineer, such as electronic computers, aids for the analysis of dynamic loads in structures, and many new laboratory machines, it might be appropriate to explore these to see how they make the engineer's work easier. Rather, I chose to establish the fact, as I see it, that the engineer's job is going to be more difficult, if we are to continue to make life easier and more enjoyable for more and more people and maintain America's economic position in the world.

Whether we discuss communications, the building business, household appliances or the automobile industry, the answers are the same. Since I am associated with the automotive business, I will use both the history and future of the motor car and truck transportation industry to try and demonstrate my point here.

It is a recognized fact that the automobile is an all-important factor in the success or failure of our economy today. Economists watch closely the department store sales in the automobile producing areas, because these sales trends are a tip-off to the direction in which the nation's economy is moving. Therefore, our job as engineers associated with the automobile business, whether civil, tool, efficiency or product engineers, is of great importance to all people *outside* our industry.

Let's review, then, the work of tomorrow's engineer in one of America's most important industries. . . .

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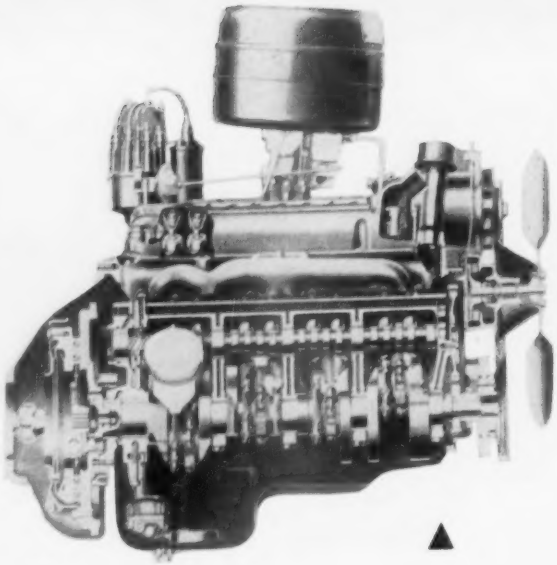
This photo shows the history of our business in unit volume and its relationship to the population growth of our country. You will note in 1910 there was one vehicle produced for every 497 persons, today there is one vehicle produced for every nineteen persons in the United States. This means production has increased itself forty-five times in the same number of years. The estimated increase in our population, indicated by the broken line, means an expanding market for automobiles. Production will have to increase to meet demand.

Also indicated is the increased rate at which cars are being scrapped. The latest figures indicate that the average car can be expected to be on the

road at least ten years. As of now, we are scrapping between four and five million annually—this means on a replacement basis alone, we will soon need about six million cars a year to satisfy this business.

However, if the automotive industry is to thrive, it cannot be satisfied with replacements—new sales must be made. This is where we bring the engineer back into the picture. We must rely on the stylist, who is another form of engineer, and the product engineer to create and develop designs that will cause product obsolescence so our sales will parallel our population trend shown on the slide. The secret is that no successful individual wants to be identified with an obsolete product. When he can afford it, he hurries to the sales room to buy one of the new models. Once his objective has been accomplished, he again is ready to advertise to his friends and neighbors that he continues to be successful, because he has acquired the essential element to demonstrate this fact. Our job then as engineers is to help our customer indulge his pride of ownership by developing new exterior appearance and new mechanical features that will make his driving more pleasant, easier and safer.



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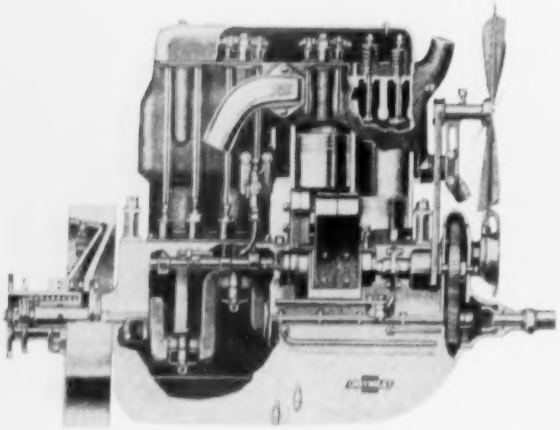
Now consider the major engine design changes in this Chevrolet 1955 V-8. This new engine required complete new plants, new machinery, all new tooling and years of designing, testing and planning and a wealth of engineering intelligence and hard work.

It is very seldom that a first design of an automotive part is the one ultimately produced. Engineers simply haven't as yet developed the ability, or will they ever in my opinion, to make the last and most producible design first. It is always a matter of design—test—correct mistakes—production study—redesign several times to meet changing methods of manufacture and availability of new machines—more test—more failure—more redesign based on ideas from new personnel entering the picture—more test. This goes on until all the time is used up.



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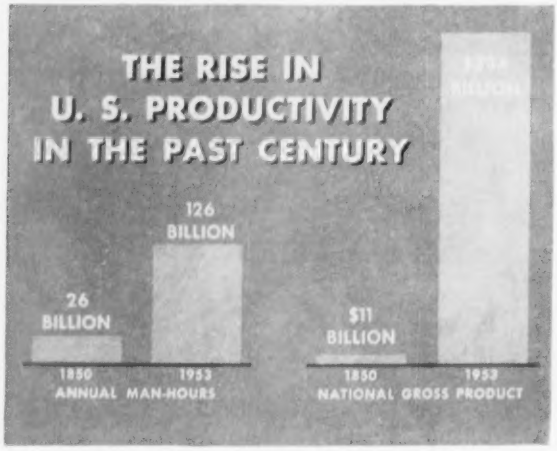
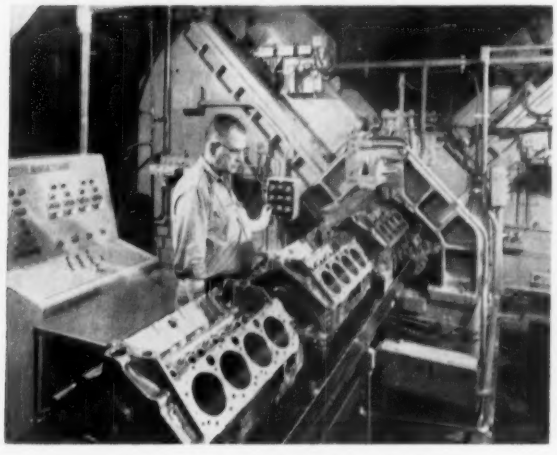
To demonstrate how the American engineer has improved products and made life easier in the past, note this view of the cross-section of a 1912 Chevrolet, 4-cylinder engine. The year this engine was built, our industry started to gather momentum, and become an influence in our national economy. Some of the features of this engine included an electric self-starter, added in 1916, valve-in-head design, twenty-four BHP magneto, Connecticut ignition system, cone leather-faced clutch, counterbalanced crankshaft, and an electric generator for lights. It had thermo-syphen cooling, replaced by a water-pump in 1918, and splash lubrication instead of an oil pump. Note its extreme simplicity. Nevertheless, it was quite an engine for its day.




As this photo shows, from 1850 to 1953 engineering know-how has done much to increase gross national product (all goods produced) thirty

times while total man-hours worked has increased only five times. This production record was made because of important contributions by engineers to hydraulic, electrical, foundry, plating and tooling techniques, to name a few. Right now, the American worker produces from two to ten times more per day than his European counterpart. Herein lies the problem. Our economists state that production must continue to increase if we are to continue to raise the living standard and maintain our high economic level. Just recently Russia's Krushchev challenged America to an all-out economic war—a rising productivity evolving from engineering brains is one way we can help meet that challenge. This is just one of many obligations the engineer has right now.

It must be remembered, improvement of the 334 billion dollar productivity figure shown also depends on more sales. It is for the customer we must work hard to make life easier. We must anticipate two, three or even ten years in advance, the products that will attract him to the market place. It probably isn't generally recognized, but the modern engineer is an unheralded salesman whose ability to create things does much to stimulate consumer demand.



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In addition to these problems, the modern manufacturing plant has another very important responsibility, and that is to its labor force. Today's model change-over must be orderly and with a minimum of down-time to avoid long lay-offs and the loss of a well organized and skilled staff of workers. The era of the multi-purpose machinery has further complicated our change-over. The adaptation of automatic machinery, such as shown here, to new processes in a matter of weeks borders on the miraculous. The design and development of present push-button systems like this multi-station finish boring machinery are problems of major proportions. However, the automatic machines of our modern factory are not, as many have been led to believe, a wonderful invention of our times. Rather they are the product of continuing progress in mechanization and material handling.

▲

I have covered present situations that verify the engineer's hard job is not going to get any easier. I would like to further support this fact with some projections into the future. Bigger and better things are expected from every engineer, and particularly from those connected with the automobile, as the industry heads for horizons unlimited.

During the growth of our industry, we have worked primarily with the processing and shaping of iron and steel. It is my opinion we are entering now a light metal era.

This is based on the rapid growth of the supply of aluminum and magnesium. The use of these metals is not new. An all aluminum car was produced in the 20's. But there has never been the momentum behind light metals that there is today.

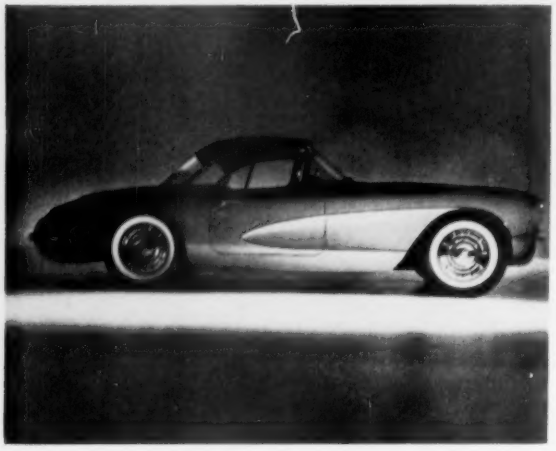
In 1955, the average car used thirty-three pounds of aluminum in applications shown in this photo—the block shown is experimental. It is predicted that 100 pounds will be used by 1970. My feeling is that this figure may be exceeded by several pounds. This is based on the installation of new reduction plants both in the U. S. and Canada, and the adaptability of aluminum and magnesium to some of our projected designs. Aluminum in castings is receiving increasing attention in design of engine and transmission parts. Wrought aluminum is finding applications in automotive decoration. It can be anodized to give beautiful corrosion resistant colors. In fact, aluminum can be found in over twenty places in the new cars.

Weight saving is another important factor. In trucks a pound of weight saved is worth one dollar to the operator per year. In passenger cars, weight saved may not be as significant as in trucks.

In some of our work it has been shown that there is approximately .002 of a M.P.G. saving per pound of weight saved keeping the perform-

ance equal. Therefore, you can see that the economies in the use of light metal will not accrue to the customer in gasoline economy. They will, however, permit the use of intricate die casts or forgings which cannot now be fabricated from iron or steel. The machineability and corrosion resistant properties ofaluminum are other beneficial features that will expand its use.

G.M.'s Firebird II has a body made of titanium, one of the important light metals of the future. Only 6000 tons of titanium were produced in this country in 1955; 22,000 tons in 1956.



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Another material the engineers and chemists are working hard to learn more about is plastics, such as used in the construction of our Corvette. They have high strength properties, they are durable, they can withstand corrosion from salts and are fire and weather resistant. They can be shaped, machined and welded. The primary drawback today is cost. This most interesting material presents another challenge to the engineer.

Besides materials, another important influence on some of our future engineering assignments will be the St. Lawrence Seaway. It will bring new sources of raw material to our industrial areas—iron ore from the great new source in Labrador, bauxite from Jamaica and petroleum products from all over the world. Shipping costs of our products even to western ports will be reduced. Three of the four principal commodites that will use the waterway, iron ore, coal and petroleum, are vital to the automotive industry. Therefore, you can look for a tremendous expansion of the Great Lakes area and expanding responsibility for the engineer.

You have heard much about gas turbine engines and the great potential these engines hold. This is one project on which engineers and metallurgists will have to expend much hard work to make these engines commercially practical for the average motorist. This shows the G.M. Whirlfire GT-304 turbine engine used in the Firebird II.

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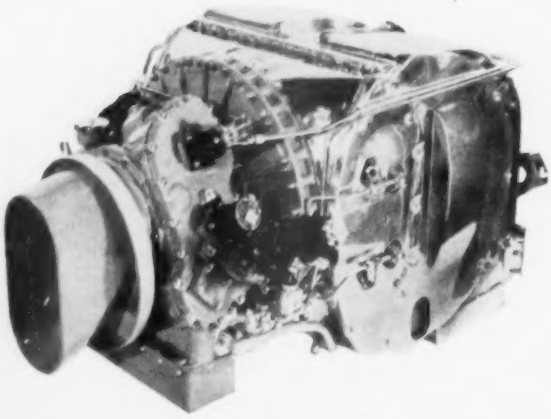


On the surface the gas turbine engine looks very attractive. However, to operate efficiently, many of the gas turbine parts must operate at relatively high temperatures. The only known metals able to withstand these temperatures are expensive and scarce, when you talk in terms of volume automotive requirements. It is true the engine operates on low cost fuels such as kerosene. However, as soon as the demand for kerosene increased, the price would no doubt go up. It is difficult to predict how far the gas turbine engine is away for the popular priced car, but I am sure you will first see further refinements in the piston engine by the use of higher compression ratios, fuel injection and the extensive use of light metals before you will be driving turbine powered cars.

Yes, the engineer is busy developing new metal alloys, plastics and concepts of power, but ideas are his big natural resource of the future. In fact, in no time during my twenty-five years in the business have I seen more opportunity and more challenge ahead for the engineer.—*End.*

## About The Author . . .

Mr. Cole

Edward N. Cole, general manager of the Chevrolet Motor Division of General Motors was born Sept. 17, 1909 in Marne, Michigan. Originally, he set out to be a lawyer and attended a junior college in nearby Grand Rapids. A summer job at the Hayes Body Corp., whetted his interest in mechanics. In 1929, he enrolled as a "co-op student" at the G.M. Institute at Flint, meaning that he would spend alternate months as a paid worker in one of GM's factories. On the basis of his qualifications, Cadillac accepted him for sponsorship. In his last term at GMI, the company asked him to leave school and take over a special project on the theory that he had already absorbed more engineering knowledge than would be represented by a degree. Mr. Cole rose from a lab assistant at Cadillac to technician and designer and in 1938 was named an engineer on technical problems.

During World War II and the Korean War he was a design engineer for light tanks and combat vehicles and gained a reputation as a foremost tank expert. Although best known in military engineering circles, his development and direction of the complete re-design of the Cadillac from body to engine—of the Chevrolet cars and trucks—have given him prime stature in the auto industry.

# Engineering Employment Practices Digest

*A short digest of a monthly bulletin published by the National Society of Professional Engineers in the interest of advancing cooperative relations between professional engineers and their employers. To regularly receive the complete publication which is distributed widely to industrial, commercial and educational organizations, write the NSPE, 2029 K St., N.W., Washington 6, D. C.*

✓ **Events have moved swiftly since the Federation of Honeywell Engineers, which represents engineers and technicians for collective bargaining at Minneapolis-Honeywell Regulator Co., voted to become a local of the United Auto Workers, AFL-CIO. The company filed a petition with the NLRB for an election to determine the desires of the employees in view of the fact that less than half of those represented are members of the union or voted in the affiliation switch from ESA to UAW. A professional committee filed a petition for a decertification election among the professional employees only.**

**ESA filed a notice of intervention to appear on the ballot in any new election. The regional NLRB office has conducted a series of conferences to consider the various petitions and attempt to arrive at an agreement for a new election. It appears that the company's petition for an election will be granted, and that the professional employees and technicians will be separated for voting purposes, although UAW had argued for one election for both categories.**

**The outlook now is for the election to take place in April, at which time the professional employees (approximately 1400 out of 2150 total in the unit) will be given the choice of voting for representation by UAW, a new ESA union, or no union. If no one of the choices receives a majority of the professionals' vote a run-off election between the two highest choices will be held. The technicians will have the same choices on their separate ballot.**

* * * * *

✓ *The Administration has proposed three changes to the Taft-Hartley Act dealing with the construction industry, one of which may be of urgent importance to professional engineers in that industry. This proposed amendment would permit the NLRB to certify collective bargaining units without an election where there is a historical background of collective bargaining. NSPE has asked Secretary of Labor Mitchell whether the proposed arrangement would wipe out the separate voting rights of professional employees in the construction industry now provided in the Act. The recommended change is under careful study by the Society on this point.*

* * * * *

✓ There are some signs of life in the long-threatened campaigns of AFL-CIO unions to organize white collar employees, including engineers. The electrical workers' union has organized a "Professional, Technical & Salaried Workers Conference Board," and is seeking representation at Frigidaire, Delco and Copeland Refrigeration Corp. A union letter to employees at Frigidaire particularly refers to engineers in the unionization drive. . . . A booklet by the steelworkers' union directed at industry's office and technical employees urges unionization and includes salary statistics for engineers and draftsmen. . . . Jack Knight, president of the Oil, Chemical, and Atomic Workers' union, recently told a meeting of the American Institute of Chemical Engineers that his union is checking into the engineering profession for future organizing prospects, but as yet is not soliciting engineers. . . . S. L. H. Burk, industrial relations director for the National Association of Manufacturers, noted the union interest in professional employees at a recent meeting of industrialists, stating that industry must work cooperatively with the professionals or lose them to the unions. Burk said industry must devise a pro-management program for professionals which will avoid regimentation and permit excused time for professional activities, as well as providing job titles and recognition consistent with professional status. . . . A crucial factor in meeting the trade unions' organizational drives is the Taft-Hartley provision giving professional employees the right to a separate vote. A copy of the law's provisions on this point will be supplied by NSPE on request.

* * * * *

✓ **An ASME survey of 330 engineers points to suggested changes in current industrial practices as the most effective measure to end professional personnel shortages. In order of frequency, the suggestions were: provide engineers with more technical assistants and clerical help, increase salaries, improve the recognition and prestige accorded engineers for their contributions to the economy. Dr. William F. Ryan, ASME president, commented: "It is apparent to me, from these results, that many efforts remain to be made by American industry before we can say we are doing all we can."**

* * * * *

✓ *NAM has published a 32-page educational booklet to aid industry in securing technicians as support personnel for professional employees. "Your Opportunities in Industry as a Technician," can be obtained from NAM's Education Department, 2 East 48th St., New York 17. . . . The Salary and Fee Committee of the Michigan Society of Professional Engineers has adopted a schedule of recommended salary rates, based on the eight NSPE grades, as follows: $5250; $5750; $6500; $7500; $9250; $11,750; $15,000; $20,000. . . . Professional employees of Miller Brewing Co., Milwaukee, have rejected a unionization bid by the Technical Engineers Association (Ind.). . . . NLRB cited lack of state certification or college graduation in denying professional status to accountants.*

by John Moxon

*Executive Vice President, The Carpenter Steel Company*

***"No isolated undertaking of an engineer or anyone else can function effectively in a vacuum. . . ."***

# *Engineers, Money and Management*

It is with a considerable degree of apprehension and even humility that I make this attempt to put down some thoughts I have developed as to just what industrial management expects to get in return for paying an engineer more money: I must emphasize that I am not an engineer myself, nor am I a scientist in any way, shape or form.

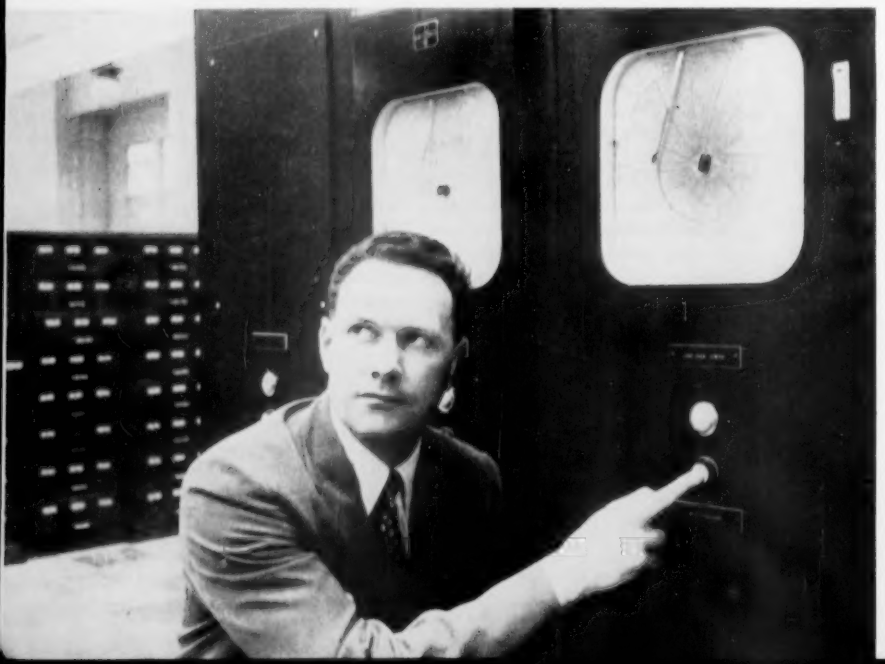
The question, "why engineers have trouble getting money from management" was one I had not been faced with before, although I have had a number of years association with engineers, and scientists of other varieties, and their problems as applied to the company for which we all work. Being somewhat baffled, I thought I would experiment with other similar questions. I asked myself, for example, "why do accountants have trouble getting money from management," or, "why do sales managers have trouble getting money from management," and so on. It seemed to me that in many ways at least, the question posed the same problem regardless of the type of endeavor to which it was applied. Furthermore, if one takes all of the questions, plots them on a frequency curve, tabulates the modes, averages, and means, and treats the outcome in a thoroughly scientific manner, I think one will find that a pattern emerges.

First of all, there seem to be two factors which are of the utmost importance. One of these might be called "breadth of understanding," as applied to the engineer and for which the engineer himself is solely responsible. The second of these factors could be called the "clarification of group objectives," for which management is clearly responsible.

It might now be well to establish just what is this individual called an engineer or a scientist, or even a skilled technician, and just wherein is the importance of his "breadth of understanding." What, if anything, is there about him as an individual, or a group, which sets him apart from the rest of the population, and which has from time to time led him to the belief reflected in the subject of this discussion—that he personally may not be getting the financial consideration he deserves and that his ideas and efforts are not being supported to the extent they deserve. I am sure that this thinking does occur with considerable frequency and it no doubt is fostered by such statistics as can be brought to bear showing that, since the beginning of World War II, expenditures for research and development have increased nearly six-fold.

According to a Department of Labor report, more than 15,000 companies now operate engineering and research departments. Seventy per cent of the expenditures of these departments were accounted for by less than 400 companies, but there is a continually growing increase in management's attention to the need for research and development. According to the same report, there were nearly 100,000 research engineers and scientists employed

*—Photo by Mine Safety Co.*



An engineer points to the reset button on a gas alarm in the office of the Philadelphia Gas Works. An alarm is sounded when combustible concentrations are detected in a regulator station five miles away. Such successful devices are examples of the engineer, sales manager and many others working together for company progress.

**A Lockheed Aircraft Corporation Missile Systems Division official points out where two new research laboratories are being built on a 22½-acre site adjacent to Stanford University's campus. Dr. Louis N. Ridenour (center), Lockheed scientist who directs the missile division's research program, indicates site of the research buildings during discussions with Dr. Frederick E. Terman (right) university provost and dean of the Stanford School of Engineering, and Dwight B. Adams, assistant business manager for the university. The author says that in the aircraft industry alone research and development expenses average 12.5 per cent of sales.**

by these departments and more than as many people again assigned to the staffs. The costs of research and development average over $25,000 per researcher and the extent of these expenditures in different industries is in some cases fantastic.

In aircraft, for example, research and development expenses have averaged 12.5 per cent of sales; in electrical machinery 6.3 per cent of sales, and in the metals industry something over one per cent of sales. It has been estimated that for all industry, research and development expenses ran some 2.3 per cent of sales. This is a lot of money and probably now reaches an annual total of well over five billion dollars. The results of this tremendous research and development expenditure are reflected in the estimate that more than fifty per cent of the products now being made were commercially unheard of twenty-five years ago.

In view of this background, is it any wonder that engineers are prone to consider themselves a decisive factor in our present day society. Regardless, however, of the perhaps prejudiced opinion of any individual engineer or scientist, he has had a great deal of outside support in these beliefs. Earlier in the century, Thorstein Veblen, the social-economist, believed that the success of industrial enterprise was due almost entirely to the efforts of the various engineers and scientists and that without them our industrial system would cease to be a system at all. He seemed to feel that the man in the cab of the locomotive, who obviously handled the throttle, also held the full responsibility for bringing the train in on time and with a pay load with no credit assigned to the switchman, the dispatcher, or the man who conceived the railroad in the first place. Veblen had considerable support that has even continued down to the present. Shortly after the fall of Paris in 1940, for example, Dorothy Thompson explained in one of her columns why Hitler was winning and here's what she said:

> "He (Hitler) has been fighting the war with an industrial and engineering economy while the democracies have been fighting the war with a money or financial economy."

Later in *Harpers*, Carl Dreher restated the same position, urging that engineers, "step into the driver's seat of American business so as to remove the heavy financial boot off the brakes and so as to let the productive machinery run freely." These remarks were made at a time when, as George S. Odiorne of the American Management Association in New York pointed out in a recent article:

> "The United States in its initial war effort was working under the direction of such 'engineers' as a mailorder house president and a country lawyer from South Carolina turned politician, and America was turning out in a single year not only a domestic demand of 100 billion dollars, but an additional ninety-six billion dollars for the military."

The engineers unquestionably played a major role in this effort, but a large proportion of decisions as to what to do and when to do it were made by people with no engineering background whatsoever.

As a financial vice president and member of so-called management, I take substantial exception to Veblen's theory as I would take similar exception to a proposition that the art of salesmanship, the art of production, or the art of financial manipulation should be considered the key to the marvelously productive American economy of today. I think we must go backward briefly into the question of just what does make the mare go.

One of the basic problems of the management function, as such, is to be able to put one's self, regardless of his particular position on his own particular totem pole, in the position of a sales manager, a financial manager, an engineer, or a personnel manager or, particularly, a customer and to think what you, as a policy maker, would think were you in any one of these other positions.

I can perhaps illustrate this by the simple story of the boy who was faced with a problem of retrieving a wandering donkey. The donkey had disappeared from its farmyard home and was nowhere to be seen. The boy had combed the neighboring countryside in a thoroughly scientific fashion, squaring off the fields and woods, marching in straight lines back and forth regardless of obstacles. Still no donkey. Finally, late in the day, he set exhausted on a rock in the hot sun and began to reason out the problem. He felt the donkey couldn't really be lost even though the farm had been searched so scientifically. But the donkey couldn't be found either. So sitting there on the rock he said to himself, "Now just what would I

**The inverted speaker, a most significant change in speaker design, is discussed by Gordon S. Carbonneau, right, president of Carbonneau Industries, Inc., and Jack Davis, the Motorola Company's radio product manager. The speaker was developed by Carbonneau in collaboration with Motorola engineers. The author believes engineers should frequently ask themselves whether their undertakings are useful and practical and profitable.**

do if I were a jackass who got out of my pen this morning?" Well, I'd amble over to that small field of clover along the woods for a while. Then I'd go on down to the creek for a good drink of cold water, after which I think I'd have some more clover across from where that fool farm boy was criss-crossing back and forth in the hot sun and then I'd get back to the barn in time for the boy to give me my regular bucket of oats." Thereupon the boy went back to the farmyard and found the jackass there ahead of him.

It is not just the so-called management group which must apply the jackass principles—at least not the management group normally referred to and consisting of chairmen of boards, presidents, and vice presidents primarily—it is the entire management-keymen group which in many instances extends clear down to the foreman in the shop and the branch office manager in Peoria. Each member of this extensive and coordinated team, in order to function constructively and to be of the most service to his company, to his governmental department, and to society, must see his job in the light of all of the other jobs with which it is inter-related, and in the light of all the economic and social and other variable factors on which the results of his job are dependent.

No isolated undertaking of an engineer or anyone else can function effectively in a vacuum by itself any more than one smooth facet on a diamond can bring forth the splendor of the whole stone. Each job is a product of many jobs just as the bright flash from the diamond is the refinement of the light which has passed from facet to facet through the heart of the stone before emerging with more brilliance than it received from the source of the light itself.

A group undertaking, be it a company, a government department or a university faculty, has might low horsepower on the basis of the separate individual units involved, but when science and salesmanship and advertising and constructive financial planning combine with efficient production and sound personnel policies, the potential of the resulting total product is almost without limitation.

The better any one individual, be he engineer or salesman or cost accountant, can adapt himself to the requirements of this complex present-day business and social world, the more likely he is to be rewarded in the fashion implied by the subject of this talk.

Now let us take a brief look at a few of the things which may be practicable in order to accomplish this objective. In the first place, I don't think anyone has the right to expect special treatment at the hands of "management" or of society as a whole because of having spent a given number of years in college, or because of having passed the bar examination, or that of the state medical board, or even because he "came up the hard way." I believe that the rewards of society will, in the long run, be distributed in accordance with the real contribution to society which each of us as individuals may make, and a little salesmanship will improve the brew.

Thus I believe that engineers, as an example, should undertake a certain amount of self-appraisal to see whether their undertakings are useful and practical and, particularly, profitable. There are many examples of complicated ingenuity accomplishing no useful end. We have all seen them in the Rube Goldberg cartoons showing fantastic apparatus for frying eggs, flying kites, and turning on the alarm. No one but a cartoonist can expect substantial rewards for efforts such as those or appropriations to continue such efforts. It therefore behooves the engineer, as it does any of us, to make sure that his work is in consonance with the purposes and objectives of the organization with which he is connected. If there are not, he is holding his sword by the wrong end.

If one wants to be all the things that one believes an engineer should be and receive all of the consideration one believes an engineer should receive, it is of the utmost importance to keep in mind continually not only the requirements of the individual job, but the requirements of all the jobs involved in the group effort.

Now we come to the second factor which I have called "the clarification of group objectives." It is a cumbersome title, but I think I can "clarify" what I mean.

In recent years, although sporadic efforts had been made over a longer period of time, more and more managements have been conscientiously working to establish long term plans and policies in order to properly guide the efforts of the whole organization. These plans are usually inspired and depend for their effectiveness upon a company's or a department's chief executive. He must be in-

terested in looking as far as he can into the future and working with his management people in planning as far as they can into the future. More importantly still, once long term planning is entered upon, management must be prepared and able to communicate the facts of life of the plan all the way down the management chain.

Furthermore, management must be prepared to receive other facts of life concerning the long term planning as they come bouncing back up the management chain. In the case of a public utility, it has frequently been advisable to look ahead ten, fifteen, even twenty years in planning of construction programs and in the providing of the necessary distribution lines, equipment, manpower, and money to carry out these programs. The degree of error involved has frequently been astoundingly low and the value of having such plans has been exceedingly great. Forward planning is more difficult in other areas of endeavor. Style goods are notably difficult to forecast although policies on style goods can be established well in advance.

In the case of my own company about which I naturally know more than about any other, we now, for a number of years, have had a fixed program of long term planning. Each succeeding year we review the plans drawn up a year earlier and extend them one more year into the future. The plans for the year immediately ahead are established in considerable detail while the plans for five years ahead are understandably more general in nature and more subject to revision, modification and cancellation than are the programs for the short term. These plans are arrived at only after extensive consideration of its own participation by each department, and are subsequently reviewed each year by the top management of the company in group consultation.

The Sales Department, for example, outlines what it hopes to do, the measures it expects to take so far as distribution facilities, sales personnel and advertising are concerned. The Manufacturing Department writes out a program of equipment replacement and production expansion. The Metallurgical Department discusses the new frontiers in specialty steels and new developments both within and without the company. The Financial Department estimates the dollars of sales and earnings and the probable availability of funds to finance all the programs. When these recommendations are made by the various departments, they are then discussed by the group and if, for example, Metallurgical is tempted to explore the possibilities of zirconium, let us say, while both the Mill and Sales feel that there is no possibility of exploiting zirconium, the Metallurgical program has to be revised in the light of these other factors. If Sales, on the other hand, wants to take on new products wanted by customers, but which can't be made by our present facilities, decisions must be reached concerning new equipment, metallurgical research and the availability of capital. Similar differences of objectives arise in every department and their solutions must be accomplished through joint effort and joint decisions. However, once the chaff has been winnowed out, there remains an overall blueprint of policies and programs all of which have been agreed to as feasible by all of the people responsible for the carrying out of these programs.

THE next step is to put down in writing the details of what is to be done in the period ahead. This written report is then submitted to the Board of Directors for their approval and, assuming this approval, the plan is in business. From that point on, each department head knows the part he must play, and through the careful communicating of this program down the line of his authority, each manager, each superintendent, each engineer and scientist, and even such people as those responsible for credit policies, know what is needed to be done.

Now, where does the engineer benefit from this kind of management program? In our organization, whether he be in production or in metallurgy, he now has a plan and a program which he can use as a yardstick for measuring the applicability of his individual endeavors. If, as a metallurgist, he is tempted to spend his time on pure research which has not been approved, he can hardly expect to receive either approbation or monetary reward. If, on the other hand, he throws his energies into channels which the management has said it wishes to explore, he can be fully assured of both organizational and financial backing for his endeavors. If the engineer in the mill is tempted to recommend a new piece of equipment for a product without a profitable future, he can generally save his breath and his report writing time because he will know that this equipment for an uneconomic purpose will never pass the Cost Department, much less the Board of Directors.

Examples of the usefulness of planning and directed effort in so far as engineers and other scientists are concerned could be repeated almost endlessly, as could also examples of wasted time and effort where no guiding program has been established and disseminated throughout the organization.

Now let me return for just a moment to the story of the jackass to emphasize the need for, first, making sure that what you are doing properly fits into what the overall plan has the rest of the organization doing. This is of as least as great importance as the plan itself and will save many a fruitless hour criss-crossing a hot field while some jackass (or should I say some other jackass) is over the hill in clover. Furthermore, this is the facet of the program over which you as an engineer have complete control. It also is a facet of the problem as it is now being looked upon by more and more of the leading engineering schools.

These schools are moving away from the concept that it is enough for an engineer or a scientist to work in a vacuum merely by being trained as a good engineer or an able scientist. These schools have come to realize that in order to take full advantage of his engineering and scientific training a man or woman must also be trained in many other things so that he can appreciate other people's problems of economics, which means profit and loss, of

*(Continued on page 46)*

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## *About the Author . . .*

**Mr. Moxon**

John Moxon was recently elected to the new position of executive vice president of the Carpenter Steel Company. Since joining the Company in 1944, Mr. Moxon has served as vice president, treasurer, secretary and director. He is a graduate of Dartmouth College and was with the Guaranty Trust Company in New York City from 1930 to 1944, having been assistant trust officer from 1932 to 1944.

Active in many organizations, Mr. Moxon is director of the Berks County Trust Company; a member of the executive committee of the Berks County Branch; Pennsylvania Economy League; board of trustees of Albright College; president of the Reading Charity Holding Corporation; member of the Tax Program Committee of the National Association of Manufacturers, and member of the Pennsylvania State Chamber of Commerce. He is also a member of the Wyomissing Club, Berkshire Country Club and Dartmouth College Club. He is married and has two children.

# NSPE Presents Views on Wage-Hour Act to Congressional Committee

**The following is testimony presented by the National Society March 15 before the Subcommittee on Labor, Senate Committee on Labor and Public Welfare, in regard to the amendment on the Fair Labor Standards Act.**

We are here today to present the Society's views on the applicability of the Wage-Hour Act to those firms which perform and render professional services to clients, especially consulting engineering firms. The present status of the law in regard to coverage of these firms is in a state of considerable confusion. This unfortunate situation has been brought about by conflicting and contrary Federal Court decisions on this problem over the last nine years. During this period two Federal District Courts, in different Circuits, have ruled that consulting engineering firms are not covered by the Act. In another Circuit the District Court held to the same effect, but was overruled by the Circuit Court of Appeals. As a result of these conflicting decisions the great majority of consulting engineers throughout the country are not certain whether the Act is applicable to their operations, or not. We believe a brief survey of the source of this conflict, the divergent Federal Court decisions, would be in order at this point.

In 1948 the United States District Court for Maryland held in *McComb v. Turpin*, 81 F. Supp. 86, that the Act did not apply to the operation of a consulting engineering service. District Judge Chesnut, in answer to a contention that draftsmen and stenographers of the defendant consulting firm were engaged in the production of goods for commerce, declared:

> I do not think even this broad literal definition (of 'production of goods for commerce') could fairly be construed to apply to the plans, drawings and specifications prepared by or under the supervision of the defendants or their employees. They are only a physical embodiment in words of professional conclusions. . . .
>
> Certainly the word 'goods' could not be construed to include the typewritten or mechanical expression by which the advice is given. These plans, drawings and specifications are not themselves the subject of barter or sale, but only the written embodiment of professional advice, and incidental thereto. They are specifically prepared to meet the particular problem of a specific client and are not sold or offered for sale to the public generally.

In conclusion Judge Chesnut succinctly declared: "The activities of the employees in this case, therefore, are not within the coverage of the Act because not within the 'mischief' to be remedied by the Act; nor within the positive wording of the Act, and not within the principles of proper application of the Act as announced in the authoritative decisions of the courts."

This well-reasond opinion of Judge Chesnut was welcomed by the engineering profession, but was not accepted by the Department of Labor, even though the Department did not appeal Judge Chesnut's decision.

In *Mitchell v. Brown*, 224 F. 2d 359, decided July, 1955, the United States Court of Appeals, Eighth Circuit, in reversing a U. S. District Court's decision (126 F. Supp. 603) in accord with Judge Chesnut's opinion in the *Turpin* case, held that the defendant's employees' preparation of plans and specifications for the repair and improvement of existing instrumentalities of commerce, together with activities of resident engineers at the actual job site, constituted activities "in commerce" and thus they were covered by the Act.

This decision of the Court of Appeals was appealed to the Supreme Court. The National Society of Professional Engineers filed an *amicus curiae* brief in support of the petition for a Writ of Certiorari in order to finally settle the question of the applicability of the Act to consulting engineering services. On October 24, 1955, the Supreme Court denied the petition without opinion.

Just last month in a U. S. District Court in Norfolk, Virginia, the problem was again before the courts. In this case, *Mitchell v. Lublin*, (No. 2070), the question arose as to whether draftsmen, field men and stenographers employed by the defendant consulting engineering firm were covered by the Act. The Court concluded that "none of the defendants' employees involved in this controversy are engaged in production of 'goods' for commerce within the meaning of the Act," and that even though the *Brown* decision may be considered in conflict with the *Turpin* case, "this Court finds itself unable to disagree with the able discussion of the subject by Judge Chesnut."

Additional litigation is pending by virtue of the Department of Labor having filed further actions against consulting engineering firms in other localities. To settle this question by litigation may take years and will result in considerable expense to the consulting engineers and to the Government.

This situation can best be corrected by Congressional action through amendment to the Fair Labor Standards Act. The National Society of Professional Engineers recommends that consulting engineering services be expressly excluded from coverage under the Act along the lines of a bill introduced in 1951 by Representative Henderson Lanham of Georgia (H.R. 2940, 82nd Congress). This result might be accomplished by adding after the definition of "goods" in Section 3 (i) the phrase "and does not include plans, drawings, or specifications, or other written, printed or typographical material, prepared or furnished by any person in connection with the performance of professional services." Furthermore, after the definition of "produced" in Section 3 (j) there should be added, "an employee shall not be deemed to have been employed in any closely related process or occupation directly essential to the production of goods by reason of any work arising out of the performance of professional services by his employer."

With these proposed amendments incorporated into the Act, the question as to whether drawings, plans and specifications are "goods" within the Act need never arise. The question as to whether the activities of employees of consulting engineering firms constituted work directly essential to the production of goods for commerce would also be eliminated.

Our opinion that professional consulting engineering services should be excluded from coverage under the Act is supported by what we believe to be the long-standing intent of Congress that professional services are separate and distinct from ordinary business or commercial activities. The Fair Labor Standards Act of 1938, as amended, provides that the minimum wage and overtime provisions shall not be applicable to any employee employed in a bona fide professional capacity.

Congress has further recognized the distinction between professional services and those of a commercial or business nature. The National Labor Relations Act of 1947, as amended, provides for separate votes for professional employees in certification elections. Congress recognized the unique nature of professional services in the Army Organization Act of 1950 by providing that

(*Continued on page 14*)

**Illinois Society of Professional Engineers**—Annual Meeting, April 11-13, 1957, Sherman Hotel, Chicago, Illinois.

**Massachusetts Society of Professional Engineers**—Annual Meeting, April 13, 1957, Thompson Club, Nahant, Massachusetts.

**Florida Engineering Society**—Annual Meeting, April 24-27, 1957, Angebilt Hotel and San Juan Hotel, Orlando, Florida.

**Indiana Society of Professional Engineers**—Annual Meeting, May 3-4, 1957, Gary Hotel, Gary, Indiana.

**New Jersey Society of Professional Engineers**—Annual Meeting, May 3-4, 1957, Ambassador Hotel, Atlantic City, New Jersey.

**New York Society of Professional Engineers**—Annual Meeting, May 16-18, 1957, Statler Hotel, New York, New York.

**Pennsylvania Society of Professional Engineers**—Annual Meeting, May 24-25, 1957, Lawrence Hotel, Erie, Pennsylvania.

**NSPE Annual Meeting**—June 6-8, 1957, Statler Hotel, Dallas, Texas.

# Charles L. Ritchie Assistant at NSPE

Charles L. Ritchie has been appointed as assistant to the executive director of the National Society of Professional Engineers. Mr. Ritchie succeeds Calvert L. Willey who recently resigned to become administrative secretary for the American Society of Lubrication Engineers.

Mr. Ritchie

Mr. Ritchie received a B.S. degree in business administration and a bachelor of laws degree from the University of Maryland. He is a member of the State of Maryland Bar.

Prior to becoming assistant to Executive Director Robbins, he held a personnel post with the United States Department of Agriculture.

# G. H. Dyer Is New Society President

The election of Garvin H. Dyer, of Independence, Mo., as 1957-58 president of the National Society of Professional Engineers has been officially announced following a meeting of the Tellers Committee in Washington, D. C., on March 13.

Other incoming officers, whose election was announced with the tellers' count of the NSPE ballots, are Allan H. Kidder, Clark A. Dunn, John B. McGaughy, Harry G. Kennedy, W. L. Hindermann, and Lindley R. Durkee —all vice presidents-elect, and Russell B. Allen, who will serve his tenth term as treasurer. Messers Kidder, Dunn, Kennedy, and Durkee are currently serving vice presidential terms, as is Mr. Dyer.

Society members also voted approval of the constitutional amendment to Article IV—Membership, Section 6, to read: "A professional Engineer, residing or practicing in a state wherein no member state society exists, *or a professional engineer who is registered according to the laws of any of the Provinces of Canada*, may become a member-at-large."

The italicized portion of the sentence was the proposed amendment.

Members of the Tellers' Committee are Scott Heider, chairman, Max H. Morris, Robert E. Morris, Charles D. Curran, and Ray C. Burrus.

# Dr. E. A. Holbrook Dies; Past Pres.

A past president of the National Society, Dr. Elmer A. Holbrook, of Pittsburgh, died recently.

Born in Fitchburg, Mass., Dr. Holbrook retired as dean of the School of Engineering & Mines at the University of Pittsburgh in 1950. Education-wise, he received his B.S. degree in engineering from the Massachusetts Institute of Technology; a mining engineer degree, University of Illinois, and a doctor of science degree, University of Pittsburgh.

Dr. Holbrook

Dean Holbrook, 75, had been a registered professional engineer in Pennsylvania since 1924, and served as president of the National Society during 1942. He was the author of many technical articles on mining and general engineering subjects.

Active in various organizations, he was appointed a member of the Pennsylvania State Sanitary Water Board from 1937 to 1954.

He leaves a wife and five children.

# Salary and Income Survey Concluded

NSPE is currently compiling data from a recent survey of the 1956 incomes of its members.

More than 17,000 replies were received, and the work of analyzing the returned questionnaires and preparing appropriate graphs and charts is now underway at the national headquarters in Washington, D. C. A five per cent increase in the number of returns was shown over the last survey in 1954.

The analysis of the income reports will be handled in much the same manner as the 1954 NSPE Income and Salary Survey. Publication of the complete report has been tentatively set for June.

# Officials Traveling

NSPE President Robert J. Rhinehart and Executive Director Paul H. Robbins have recently been doing some extensive traveling.

President Rhinehart visited and talked at the annual meetings of the following state societies: Kansas, Oklahoma, New Mexico, Minnesota, and Ohio.

Executive Director Robbins also has had a busy schedule. He attended and participated in a meeting of the Chicago Chapter, the annual state meetings of Nebraska, New Mexico, and Ohio, a joint meeting of the Gulf Coast Chapter of the Texas SPE and the Texas Dow Institute, and a conference on "Effective Utilization of Engineering Personnel" at Michigan State University.

# Seek Suggestions For Committees

President-elect Garvin H. Dyer recently issued a memorandum to national and state society officers asking for recommendations in the selection of 1957-58 committee members.

Attached to the memo from Mr. Dyer was a listing of the various NSPE committees with space provided opposite each to write in the names of members for possible appointment.

***DuPont Engineer to Receive Annual Award . . .***

# Announce Plans for Texas Meeting

The twenty-third annual NSPE meeting will be held in Dallas, Texas, June 5 through June 8. Meeting place for the four-day convention is at the Statler-Hilton Hotel.

Committees and chairmen have their program completed for welcoming of the large attendance that always find Texas a hospitable State. The last Texas NSPE meeting was held in Houston in 1949 when Herbert Hoover was honored as the outstanding engineer of the year.

Exhibit space has been provided at this convention with numerous firms who have products and services for the engineers interested in the booth space.

A ladies program has been arranged to provide an interesting trip for the wives of the convention-goers.

An all-day Executive Committee meeting followed by the Board of Directors dinner and meeting takes care of the opening day on Wednesday, June 5.

A ranch-style party follows the business sessions on the second day, the party to be held at the Ridglea Country Club in Fort Worth.

While the exhibits and registration desk will remain open for the entire convention, there will be Functional Section meetings dealing with young engineers in industry, private practice, government and education.

The Functional Section for Consulting Engineers in Private Practice, brought into being at the last annual meeting, is planning a full day (June 7) program this year, Chairman A. C. Kirkwood has announced.

The theme of the meeting at Dallas will be "Young Engineers" and the highlight of the Functional Section meeting will be a symposium devoted to the problems of the Engineer in the Employ of Private Practitioners. This feature is being jointly sponsored with the Section by the Engineering Practices Committee under the Chairmanship of Leslie C. Gates, and the Employment Practices Committee through its Sub-Committee Engineers in the Employ of Private Practitioners under the chairmanship of Linas Brown.

Anthony J. Del Mastro, chairman of the Engineers in Education Subcommittee, announces that the Section of the Professional Development of the Young Engineer in Education will feature three outstanding speakers—Dr. John C. Calhoun, Jr., dean of engineering at A&M College of Texas, Prof. Robert E. Stiemke, director of the School of Civil Engineering at the Georgia Institute of Technology, and a third speaker yet to be named.

On the closing day of the meeting, a state awards luncheon will feature an address by Congressman Bruce Alger of Texas. The presentation of the NSPE Annual Award for 1957 to Granville M. Read, chief engineer of

**Mr. Read**

the engineering department, E. I. du pont de Nemours & Co., Inc., Wilmington, Del., will be made in the evening at the annual banquet.

For the ladies, the trip will include a brunch and style show at Neiman-Marcus. Sightseeing tours in air-conditioned buses are planned. And a tea on the top floor of the Republic Bank will give visitors a bird's-eye view of the city.

A nine-day tour of Mexico — arranged by the National Railways of Mexico — following the close of the meeting might prove of interest to many members. For further information write to the Railways at 2401 Transit Tower, San Antonio 5, Texas.

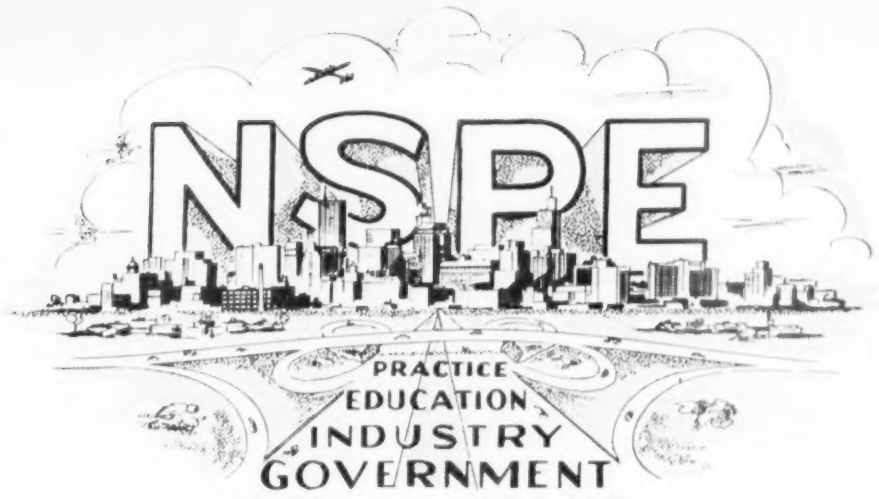
Space is still available for exhibitors interested in equipment or services for engineers. The almost 40-thousand coverage of NSPE affords firms an excellent contact in person with the registered engineers. W. A. Hiers of Westinghouse Electric, Fidelity Union Building, Dallas, may be contacted on the availability of space for exhibits.

General arrangements committee is headed by Frank W. Chappell with former NSPE president T. Carr Forrest, Jr., on his committee. Familiar with past conventions and on the planning staff are William L. Cobb, William A. Hiers, Allen H. Smith, and George A. Smith, Jr.

Mrs. Frank W. Chappell will assist with the ladies program. Other members of the committee on the convention are Roy A. Taylor, Garland Threadgill, D. J. Tucker, and Gibbs A. Dyer.

## Annual Meeting Committee

**Planning for the NSPE annual meeting to be held in Dallas in June met a wholesome response with this large arrangements committee meeting. In attendance were: clockwise—inner circle: Alan H. Smith, Director, Dallas Chapter; Mrs. John Pratt, Dallas Chapter Auxiliary; Mrs. Cedric Willson, Dallas Chapter Auxiliary; Mrs. Frank W. Chappell, president, Dallas Chapter Auxiliary; Frank W. Chappell, chairman, national convention committee; Paul H. Robbins, executive director NSPE; John Pratt, national director, Dallas Chapter; Garland Threadgill, Dallas Chapter. Clockwise—outer circle: W. L. Cobb, vice president, Dallas Chapter; Roy A. Taylor, Dallas Chapter; W. H. Sinot, vice president, Fort Worth Chapter; Gerson Berman, Dallas Chapter; F. C. Clayton, Ft. Worth Chapter; Carr Forrest, past president, NSPE; J. Neils Thompson, Austin Chapter; George Smith, Dallas Chapter, alternate national director; Elgin B. Robertson, Dallas Chapter; R. J. Rhinehart, president, NSPE; H. G. Gregerson, president, Dallas Chapter; Durwood J. Tucker, Dallas Chapter; Noah E. Hull, national director, San Jacinto Chapter.**




## INTERESTING FACTS

The Twenty-third Annual Convention of the National Society of Professional Engineers will bring together all branches of the Engineering Profession, within whose portals are the men in responsible positions who buy and specify your product.

Previous conventions have averaged well over 1000 attendance, however, plans and accommodations for this Dallas meeting anticipate attendance of 1500. Emphasis will be given to the young Engineers. Educational exhibits will be featured, and we expect approximately 400 senior engineering students from Southwestern colleges.

Convention Headquarters will be held at the new Statler-Hilton Hotel, Dallas, Texas, June 6, 7, 8.

Dallas, located in the heart of the greatest business market in the nation, offers the manufacturer and the distributor an opportunity to exhibit to a business potential the salesmen may never see except at this convention.

You are invited, as representatives of industry manufacturing and selling equipment, supplies, processes, and services — from the small supplier to the industrial giant — to display your products, materials and services, through the selective medium of the "Engineer in Practice, Education, Industry, and Government."

## *SHOW YOUR PRODUCTS — MEET YOUR MARKET — TELL YOUR STORY*

The Statler-Hilton Hotel

*For Complete Information Write Now To . . .*

**Chairman, Exhibit Committee, Texas Society of Professional Engineers,**

**Westinghouse Electric Corp., Fidelity Union Life Insurance Bldg., Dallas, Texas**

# NATIONAL ENGINEERS' WEEK, 1957

## *Annual Observance Attracts Widespread Support*

### *A PR Achievement—*

Each year since 1951 has been a steady increase in the amount of public attention given to the engineering profession during its annual Week in the month of February. This year has been no exception. The mass of newspaper and magazine clippings received at the NSPE office in Washington testifies to the support the Week had in the press. Such support implies widespread public interest.

In text and pictures on the next few pages, the AMERICAN ENGINEER presents a survey of the highlights of the Week as observed by NSPE groups throughout the country.

### *Arizona, California*

A three-man scholarship committee was organized by the Arizona SPE to canvass firms in that state regarding the establishment of scholarships at state institutions. Citizens in Phoenix were offered a manufacturers' display of such things as atomic reactors, solar energy devices, steam plants, and other engineering accomplishments.

The Week saw many exhibits in California, including a model of the Navy's "Operation Deep Freeze" in Antarctica set up in San Diego. In San Francisco, a career conference for high school students was sponsored by the San Francisco Engineering Council and the local Board of Education. Awards were presented to ten Bay area engineers for contributions to their communities and to their profession. A 17-year-old San Jose high school senior was cited as an "outstanding example of America's future scientists and engineers," by the Bay Area Engineers' Week Committee. The youth appeared on a special career conference telecast during the Week.

### *Delaware, Georgia Groups Make Awards*

Granville M. Read, chief engineer of the Du Pont Company, received the first annual award of the Delaware SPE as that State's outstanding professional engineer. Governor J. Caleb Boggs presented Mr. Read with a bronze plaque. The award was made at a banquet climaxing the Week.

In Savannah, Georgia, six high school students were given expense checks by the city manager to enable them to visit the campus of Georgia Tech for several days as guests of the Savannah Chapter of the Georgia SPE. In Macon, the Matador, giant Air Force guided missile, was displayed all Week. Highlight of the Week in the Macon area was the annual dinner meeting of the Macon Chapter. Featured speaker was Brig. Gen. William E. Brougher, Ret., former commander of the 11th Division, Philippine Army. Lapel buttons for the Week were distributed by the Georgia SPE.

### *The Week in Illinois, Indiana, Kansas*

The Central Illinois Chapter presented two half-hour TV programs Sunday, February 17, entitled "Contributions of Engineers to Society," and "Opportunities in Engineering." Both were panel programs, and the latter featured high school seniors who planned careers in engineering. The film "Eager Minds" was shown to more than 3,000 high school students in the Decatur, Illinois area.

The Mayor of Chicago signed a proclamation for the Week, as did the governor of the State. The Du Kane Chapter presented the AMERICAN ENGINEER film to Rotary, Exchange, and Cosmopolitan clubs in Elgin. Chapter representatives introduced the film at each showing and gave a brief talk about the profession. The Champaign County Chapter showed the same film eleven times. Locally developed radio and TV programs were also reported by the Champaign group.

"Future Automotive Engine Design" was the topic of a talk given at an Engineers' Week banquet in Fort Wayne, Indiana, by Victor G. Raviolo, director of the advance product study and engineering research office of the Ford Motor Company.

More than 1,500 persons were attracted to the open house held at the school of engineering at Wichita University, Wichita, Kansas. Sponsored by the student engineering council as

**PICTORIAL HIGHLIGHTS OF THE 1957 WEEK—*Top:* A bust of Washington and the theme for this year's observance make up a display for the Westchester County Chapter of the New York State SPE. *Below:* Mayor Steven Pankow of Buffalo signs a proclamation for the Week, while two Erie County, N. Y., chapter members look on. Left is Clair O. Dean, first vice president of the group, and Earl A. Schilt, chapter president.** ▶

one of the events of the Week, the program included an exhibition and display competition among various departments of the engineering school.

The Topeka Chapter of the Kansas Engineering Society obtained public service time for radio and TV programs, sponsored the showing of the American Engineer film to high school students, and held a dinner meeting with Dean Curtis L. Wilson, Missouri School of Mining and Metallurgy, as guest speaker.

### *Lady Engineers Make News In Boston Area*

Three women in the Boston area were spotlighted in a *Boston Globe* feature article during the Week. They were Dr. Martha B. Thomas, chemical engineer, Miss Mattie McFadden, missile systems engineer, and Miss Anne Winnerman, freshman in the school of chemical engineering at Tufts College.

Six professional engineers took part in a panel discussion at MIT sponsored by the Massachusetts SPE. The panel was one of a series developed to deal with the problem of "how to guide elementary and high school students toward mathematics and science leading to careers in engineering."

### *Michigan, Missouri*

The Week in Detroit saw engineers attending a joint meeting sponsored by the following groups: The Engineering Society of Detroit; Detroit Chapter of the Michigan SPE; Detroit Section, American Society of Refrigerating Engineers; Michigan Section, American Society of Civil Engineers; and the Detroit Chapter of the Society of Women Engineers. The guest speaker for the evening was Walker L. Cisler, president of the Detroit Edison Company.

The Benton Harbor-St. Joseph Chapter sponsored an essay contest for high school juniors and seniors on the subject of "Why I Would Choose Engineering as a Career." A special display of books, magazines, and pamphlets on engineering was set up for the Week at the Benton Harbor public library.

At an Engineers' Week dinner in Flint, Michigan, Charles Stewart Mott was presented with a plaque honoring him as Michigan's engineer of the year.

The Ozark Chapter of the Missouri SPE had the participation of seven

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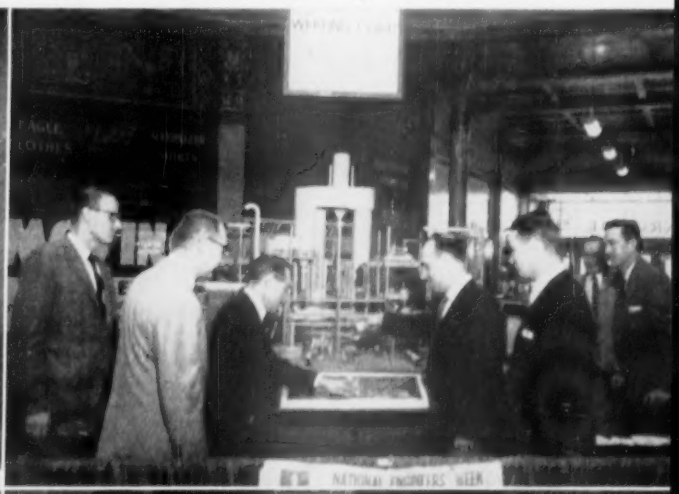
***Top left:*** **A window display at 10th and Chestnut, Philadelphia.** ***Bottom left:*** **Michigan's Governor Williams looks over his proclamation for the Week in that State. Standing, left to right, are John Kushing, Milton Adams, and A. C. Fried.** ***Top right:*** **Cleveland engineers view an exhibit of a foundry set up by the Whiting Corporation. Left to right are Wilbur S. McKay; Calvin B. Dalton, committee chairman for the Week in Cleveland; Frank S. Palocsay, president of the Cleveland Chapter of the OSPE; Michael A. Fanelli; James R. Condon; and James R. McKinney.** ***Bottom left:*** **Mayor David L. Lawrence of Pittsburgh puts his signature on a proclamation. Left to right are Thomas J. Landau, president of the Pittsburgh Chapter of the Pennsylvania SPE; Arthur F. Nass, Pittsburgh area chairman for the Week; Russell M. Jenkins, chapter public relations director; and William L. Donovan, executive vice president of the Pittsburgh Chapter.**



***Top left:*** **Dr. Lester M. Goldsmith, center, receives a citation honoring him as Philadelphia engineer of the year. With him is Allan H. Kidder, left, and John L. Bahr, National Engineers' Week chairman for 1957.** ***Bottom left:*** **Robert E. Shreeve, first vice president of the Baltimore Chapter of the Maryland SPE, receives a proclamation from Mayor D'Alesandro. Left to right are F. E. Winslow, president of the Maryland SPE; Louis A. Koehler, Jr., chairman of the Engineers' Week committee of the Baltimore Chapter; and R. C. Dannettel, second vice president of the Chapter.** ***Top right:*** **General Electric engineers in Philadelphia look over a wall poster display. George F. Metcalf is at the left, and at right is Bernano van Zyl.** ***Bottom right:*** **Delaware's Governor J. Caleb Boggs, right, presents the first award for his state's outstanding professional engineer to Granville M. Read, chief engineer of the Du Pont Company.**

faculty members of the Missouri School of Mines and Metallurgy at Rolla, Missouri. The engineering educators spoke before local civic and business groups.

### *New York State Has Active Observance*

A series of talks on engineering as a career were made by members of the Chautauqua-Cattaraugus Chapter of the New York SPE. The Westchester County Chapter also went to the high schools, with the AMERICAN ENGINEER film being shown to students in Rye and Mamaroneck.

In Schenectady, a busy Week featured the following: a proclamation by the mayor; a feature section on engineering in the local newspaper; exhibits set up in stores, libraries, and schools; a showing of the film "To Enrich Mankind" on TV, followed by an interview of Mr. E. S. Lee, retired editor of the *G.E. Review;* an educational series TV program; a career counselling dinner for students; talks at Rotary, Lions, and Kiwanis clubs; and a showing of the AMERICAN ENGINEER film five times.

The Rockland Chapter of the NYSPE sponsored a panel discussion on the future growth of Rockland County. In Binghampton, area Boy Scouts were treated to the opportunity to look over a demonstration of gadgets as part of a Science Congress in connection with Engineers' Week.

### *The Week in Ohio*

Engineers were in the news in Ohio during the Week. The *Cincinnati Enquirer* published a 10-page special section, and a Toledo paper had a six-page section. In Cleveland, the Week started off with a proclamation by Mayor A. J. Celebrezze, and continued with a number of radio and TV programs. An illustrated article in the *Cleveland Press* featured three outstanding engineers in that city.

In Painesville, residents had a chance to view a collection of surveying instruments that date back to the time of George Washington. The collection, owned by Clyde Hadden, P.E., was displayed in a bank window. The Marion District Chapter obtained displays in eight local firms. The group also sponsored a half-hour panel discussion over radio station WMRN, and daily spot announcements during the Week. Six members of the Future Engineers Clubs in the area were presented with certificates of accomplishment by the Marion Chapter.

Dr. W. L. Fisk of Muskingum College spoke on "Engineers and Human Problems in the Middle East and Middle West" at a joint meeting of

members of the Zanesville area chapter, the AIEE, and the Society of Plastic Engineers. A panel discussion on metropolitan problems was held at the Dayton Engineers Club under the sponsorship of the Dayton Chapter of the OSPE. A panel of four engineers in Coshocton discussed the opportunities in engineering before an audience of high school students and their parents. The Canton Regional Chapter held its sixth annual Engineers' Week banquet during the 1957 observance.

### *Pennsylvania*

Awards to deserving students were a feature of Engineers' Week activities throughout Pennsylvania. The Lebanon County Chapter presented a $25 savings bond to Miss Helen Lawrence as the senior high school student having the "greatest ability in all branches of mathematics." The Luzerne County Chapter presented a slide rule to the "outstanding mathematics major" at the Hazleton High School.

A check for the purchase of technical books was presented to the public library in York by members of the Lincoln Chapter. A highlight of the Lincoln group's activity was the presentation of scale models built from sketches of Leonardo Da Vinci. Some 300 persons visited the exhibit.

The big event of the Week in Philadelphia was an award luncheon for Dr. Lester M. Goldsmith, general manager of engineering and construction for the Atlantic Refining Company. Dr. Goldsmith was presented with a citation from the Philadelphia Chapter as "engineer of the year."

### *Tennessee, Texas*

A banquet co-sponsored by seven engineering societies was the highlight of the Week in the Knoxville, Tennessee, area. Guest speaker for the affair was Farno L. Green, senior research physicist, General Motors Corporation. His subject was "You, and the Atom." A speakers' bureau made up of ten local P.E.'s appeared before high school students and civic groups in the community.

High school students were the center of attention during the Week in the Galveston, Texas, area. Galveston County Chapter members sponsored a student visit to the district office of the Army engineers to learn at first hand how the things studied in high school courses in math and science are put to use in an engineering office.

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***Top left:*** **Four Pennsylvania engineers watch Mayor Andrew J. Jakomas of McKeesport, Pa., sign a proclamation. Left to right are William L. Donovan, Russell M. Jenkins, Arthur F. Nass, and Thomas J. Landau.** ***Bottom left:*** **Part of the group attending the Engineers' Week banquet of the Sabine Chapter of the Texas SPE. Guest speaker for the affair was Representative Martin Dies, of Lufkin, Texas.** ***Top right:*** **Three of the chief figures at the Sabine, Texas, banquet pose at the speakers platform.** ***Left to right:*** **William J. Deevy, chapter activities chairman; Representative Martin Dies; and Charles A. Knight, chapter president.** ***Bottom right:*** **Leonard F. Geiger, PR committee chairman of the Reading Chapter of the Pennsylvania SPE, receives a proclamation from Mayor McDevitt. Joseph B. Homsher, chapter president, looks on.**

The Chapter also took students on a boat tour of the Galveston harbor. Achievement certificates were awarded to outstanding high school students in mathematics, physics, chemistry, and biology.

In Dallas, Frank Chappell, Sr., was named "engineer of the year." His engineering projects include the Dallas Naval Air Station, the Cotton Bowl, and Red River Arsenal. Books and pamphlets on engineering were displayed at the Austin public library. The ladies in the Austin area joined in the observance during the Week with a benefit style and fashion show and tea sponsored by the auxiliary of the Travis Chapter of the Texas SPE. An exhibit in the window of an Austin men's clothing store showed how engineering research had developed new fabrics.

### *New Baltimore Chapter Has Big Week*

The newly-formed Baltimore Chapter of the Maryland SPE went in heavily for radio and TV projects. The Week got an early start on February 13 with a TV show featuring portions of the film "To Enrich Mankind" and several panelists. During the Week, spot announcements were broadcast over all nine local radio stations. Some of the announcements were tape recorded by prominent Baltimore engineers and broadcast every hour. Tape recorded programs were also used on radio stations, and TV stations used slides showing the 1957 Engineers' Week poster design. A special exhibit of engineering books was set up at the Enoch Pratt Libraries, and window displays were obtained in a number of downtown locations. Climax of the Week was a dinner meeting sponsored by the Baltimore Chapter in conjunction with the Engineers Club of Baltimore and its twenty-two affiliated technical societies. The guest speaker was George S. Trimble, Jr., vice president, engineering, Glenn L. Martin Company.

### *Exposition in Florida*

The engineering school at the University of Miami held its second annual exposition during the Week. A seven-foot robot was a star attraction at the affair which was attended by several thousand visitors. A variety of engineering exhibits sponsored by more than forty industries, documentary films on engineering, and talks by local engineers were featured in the exposition. The Engineering Club at the University held its first annual engineering school breakfast in connection with the observance of the Week. Dick Roberts, vice president of the Florida Power and Light Company, spoke at the breakfast on "Industrial Growth of Florida: Past, Present, and Future."

Don't forget those reports! All state society and local chapter Engineers' Week committee chairmen are urged to send complete reports on the Week's activities in their areas to the National Society office, 2029 K Street, Northwest, Washington, D. C. All reports will be kept on file for one year, and may be inspected by NSPE members visiting the National Society headquarters. Make sure your group is represented in this National Engineers' Week record of achievement.

### *Up in Wisconsin*

Dr. Athelstan F. Spilhaus, dean of the Institute of Technology of the University of Minnesota, outlined the program of the International Geophysical Year before a joint meeting of the Eau Clair Technical Society and the Northwest Chapter of the Wisconsin SPE.

The Southwest Chapter of the Wisconsin SPE presented an award of merit to Arthur J. Roderick, a sophomore in mechanical engineering at the University of Wisconsin. The award was made on the basis of the youth's "outstanding scholastic potential, general aptitude, and attributes of self-reliance, initiative, perseverance and industriousness."

"Engineering resource built our industrial complex and our standard of living to a point of greatest production potential in the world today," George P. Steinmetz, chairman of the Wisconsin Public Service Commission, declared at a meeting of the Fox Valley Chapter. Guests at the affair were school principals, educators, and students from the thirteen county area represented by the Chapter.

Joseph H. Kuranz, P.E., bylined a feature article in the *Waukesha Freeman* on the formation of the Waukesha Chapter of the Wisconsin SPE in the fall of 1956. The article described the increase in the number of professional engineers in the area in recent years.

### *R. J. Rhinehart Speaks At New Orleans Affair*

Robert J. Rhinehart, NSPE president, was the principal speaker at a meeting in New Orleans sponsored by the Louisiana Engineering Society. Sixteen other engineering societies participated in the meeting.

### *Oklahoma Speakers*

Civic groups throughout Oklahoma heard a variety of professional engineer speakers during the Week. Typical of the speakers bureau programs in the state was the one arranged by the Bartlesville Chapter of the Oklahoma SPE. P.E.'s spoke before Lions, Kiwanis, and Rotary Clubs, the local Chamber of Commerce, and several other organizations. Engineering exhibits were also set up in area high schools. The Week in Oklahoma was proclaimed by Governor Raymond Gary.

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***Opposite page, top left:*** **Mayor Charles P. Taft of Cincinnati presents a proclamation to Ward Simonson, local Engineers' Week committee chairman. Looking on, left to right, are George Spengler, president of the Cincinnati Chapter of the Ohio SPE; Walter G. Seinsheimer, chairman of the Technical and Scientific Societies Council; and George H. Larkin, president of the Engineering Society of Cincinnati.** ***Center left:*** **Washington, D. C., engineers discuss their space satellite exhibit. Left to right are Oscar Beasley, president of the District of Columbia SPE; Scott Heider, Engineers' Week committee chairman in the District; and Peter Caffes, chapter PR committee chairman.** ***Bottom left:*** **The Macon Chapter of the Georgia SPE had a giant size exhibit in the form of this Matador guided missile.** ***Top right:*** **The Army's Nike guided missile was on exhibit at the State House in Boston, Massachusetts. Left to right are Nicholas Stadtfeld, Westinghouse engineer and state chairman of the Week; Brigadier General Robert J. Fleming, Jr., New England division engineer; and Foster Furcolo, governor of Massachusetts.** ***Center right:*** **Dean N. W. Dougherty was the keynote speaker at the first annual open house dinner meeting of the recently chartered Tullahoma Chapter of the Tennessee SPE.** ***Bottom right:*** **Cleveland's Mayor Celebrezze makes Engineers' Week official in his city. Left to right are Frank H. Palocsay, J. R. McKinney, and B. B. Farmer.**

### *South Carolina*

Robert L. Sumwalt, dean of the School of Engineering at the University of South Carolina, spoke at a meeting of the Camden Chapter. Special guests at the affair were high school students from the area. The Camden Chapter sponsored an essay contest for the students, and the first and second place winners presented their papers at the meeting.

### *Washington, West Virginia*

W. A. Bugge, Washington director of highways and president of the American Association of Highway Officials, was the featured speaker at a banquet sponsored by the Seattle Chapter of the Washington SPE. Mr. Bugge spoke on the state highway department's need for engineers in relation to the expanded highway program.

A televised panel discussion designed to promote interest in engineering as a career was presented in Wheeling, West Virginia. The panelists answered questions from high school students.

Elsewhere in West Virginia, radio and TV programs on engineering were heard throughout the Week. The Weirton Chapter obtained several radio and TV programs each day, Monday through Friday. Dr. J. S. V. Allen, head of the physics department at Bethany College, spoke on "The Atomic Age" at a dinner meeting of the Fairmont Chapter.

In Huntington, the public had a chance to see a working scale model of the Greenup lock and dam in the Ohio River. The model was set up in a downtown bank.

### *Award in Utah*

Theta Tau, University of Utah Chapter, chose Dale M. Diamond, a senior in electrical engineering, as the outstanding engineering student at the University. He was honored at the open house sponsored by the College of Engineering during the Week. The award was made on the basis of student activity and scholarship.

### *North Dakota*

Colonel Lyn Pine, Garrison district engineer for the Corps of Engineers, was the featured speaker at an Engineers' Week banquet in Minot, North Dakota. The Rotarians of Bismarck held a special program during the Week and heard talks by local professional engineers.

# NEW Processes . . .

## *Engineers Develop "Sinterwrought"*

A new process for making wrought products from metal powders has just been developed by research engineers of the Sintercast Corporation of America, Yonkers, New York. By this method, the known advantages of powder metallurgy—the ability to "tailor" compositions of metallic mixtures to specific requirements—are achieved in shapes such as strips, bars and tubes of long lengths hitherto unobtainable by powder metallurgy. Known as "Sinterwrought," this process eliminates many of the disadvantages of conventional powder metallurgy techniques and of conventional casting and metal-working.

Contrasted with conventional metal powder products, Sinterwrought products have greater strength and ductility. Equally important, Sinterwrought products do not contain the impurities present in the cast billets from which conventional wrought materials are made. Extremely precise control of composition, not possible by normal melting techniques, can now be achieved. Also,

**Stages in the production of Sinterwrought products: (left) Homogeneous mixture of metal powders; (center) ingot produced from these powders; (right) finished wrought shapes made by the Sinterwrought process. Sinterwrought strip is already available in lengths of 20 feet or more.**

critical metallic or nonmetallic ingredients can be added to the compositions in a more uniform dispersion than possible by melting. Metals handled by the new Sinterwrought method include aluminum, copper, nickel, cobalt, carbon steel, stainless steel, and alloys of these metals. Recent experiments indicate that metals of increasing industrial significance, such as columbium titanium and zirconium, may also be handled by the Sinterwrought technique.

## Centralized Lighting System

A new centralized emergency lighting system that constantly supervises itself has been tested and approved by Underwriters Laboratories. The System, which is designed to provide emergency illumination throughout public and private buildings, also exceeds the requirements of the National Electrical Code.

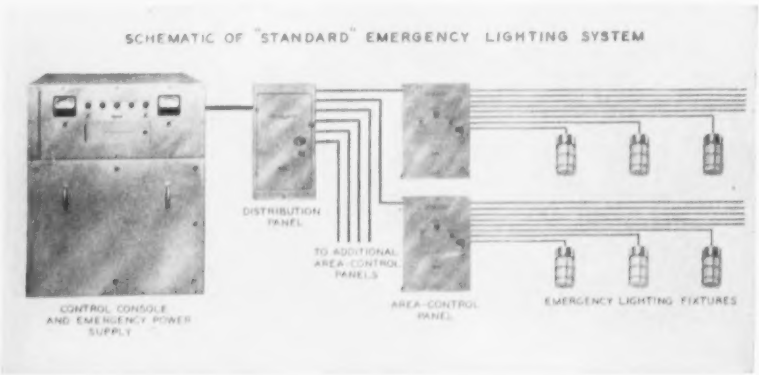
Because emergency equipment must always be in operating condition, safety authorities have insisted that fire alarms, sprinkler systems, etc., be self-monitored. Manual inspections and tests are not enough and cannot be relied upon. Such equipment must report faults or disarrangements at the time they occur, before an emergency arises.

The new emergency lighting system not only reports, by flashing lights and buzzers, any fault to the system but even sounds an alarm when an emergency lamp is removed from its socket. This built-in supervision makes the system 100 per cent foolproof and gives full assurance that emergency lights will go on whenever regular power fails.

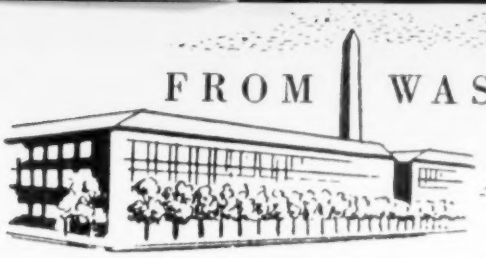
In operation the system is instantaneous and fully automatic. Emergency lights go on the instant regular power fails and go off when power is restored. The special 32 volt battery is automatically recharged and kept at full capacity by a constant trickle of charging current.

To add to the reliability of the system, it uses a long life nickel-cadmium battery that is good for twenty-five years or more. This battery uses an alkaline electrolyte that does not corrode or give off obnoxious fumes. And since it is not an acid, it does not deteriorate the plates of the battery.

The new emergency lighting system is made by The Standard Electric Time Company of Springfield, Mass., who are pioneers of electrically supervised interior fire alarm systems. The emergency lighting system has been especially designed for new hospitals, schools, office and industrial buildings. It overcomes the operational and aesthetic disadvantages of box-on-the-wall type units by extending to emergency lighting the same degree of reliability for which high quality fire protection devices have long been known.




**A 32-volt centralized emergency lighting system that is electrically supervised to report any disarrangement of the system at the instant it occurs. Exceeds requirements of National Electrical Code—Listed by the Underwriters Laboratories. Control Console and Distribution Panel are located in room away from danger of fire or flooding.**



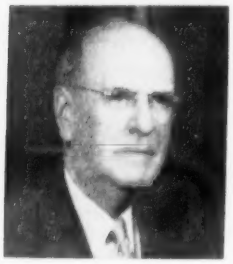
# FROM WASHINGTON

By
Milton F. Lunch,
*N.S.P.E.'s Legislative Analyst*

## SCIENCE AND ENGINEERING—THE CONTEST FOR SUPREMACY

THE marriage of science and engineering has not always been a happy one, and it is not unknown for arguments within the "family" in the private industrial atmosphere to flare into public print. These occasional private spats are not particularly of national significance, but it is a different story when the rupture occurs in public agencies spending public funds, particularly when it is in the Department of Defense—the most important single element today in total national expenditures for research and development.

A recent move by Secretary of Defense Charles E. Wilson consolidating the offices of Assistant Secretary for Research and Development and Assistant Secretary for Engineering into one office of Assistant Secretary for Research and Engineering, headed by an engineer, has been



Honorable Frank D. Newbury,
Assistant Secretary of Defense

interpreted—rightly or wrongly—as a victory for engineers over scientists. More correctly, the dispute, which has evoked some rather strong reactions from Capitol Hill and elsewhere, is the old question of the degree of emphasis which should be given in government programs to pure or basic research, as contrasted to practical or applications development.

Combining the engineering and research offices was recommended in 1955 by the Hoover Commission, but it is not clear whether it was intended that the scientific or engineering office should predominate. Dr. Clifford C. Furnas, prior to his recent resignation as head of the Pentagon research and development post, was reported to have urged consolidation of the two offices into one, but with a research man as the head and engineering subordinated. Instead, Secretary Wilson designated Frank D. Newbury, head of the engineering office, for the new position, with William M. Holaday, formerly Acting Assistant Secretary for Research and Development, but an engineer also, as Newbury's deputy. Newbury is a mechanical engineer who retired as vice president of Westinghouse eleven years ago.

The reaction to Secretary Wilson's move was not long in coming. The interpretation in the public press was that "research has lost," and that it is "a blow to scientists and a victory for engineers." Obviously, Secretary Wilson anticipated the controversial nature of the change by including in his announcement a statement that the new organization would not decrease the responsibilities or contributions of the scientists in the over-all research and engineering program. "This country and our defense are dependent upon the accomplishments of our scientists and engineers," he declared, "and every effort must be made to maintain a cooperative and efficient environment whereby the results of their work will receive maximum utilization. An obvious advantage of the single office is the greater simplicity of external relationships and internal organization and administration."

But apparently many influential figures on Capitol Hill are not satisfied with the Wilson explanation. One report is that Air Force Secretary Quarles was raked over the coals at a closed session of the Senate Armed Services Committee by Chairman Russell of Georgia for the Pentagon's alleged subordination of research. Representative Carl T. Durham of North Carolina, chairman of the Joint Atomic Energy Committee, supported by Representative Melvin Price of Illinois, a ranking member of that committee, blasted the change as "foolhardy" and "dangerous." He said that the move was an "alarming manifestation of this tendency toward deemphasis on basic research," not only in the Defense Department, but as well in other agencies, such as the Atomic Energy Commission.

"With all due respect to the engineering profession which has contributed so much to our nation's strength and security, I think it is essential that our military research

*(Please turn the page)*

and development program be headed up by a topflight individual having the confidence of the scientific community, with a staff composed of imaginative and dedicated men who are unafraid to explore new scientific frontiers," Durham said. "There is no such thing as the status quo in military technology. You either progress or you fall behind. And the only means of insuring progress is through a vigorous research and development program aimed at developing new ideas and concepts on a continuing basis."

Durham said he was "shocked" by a recent statement attributed to Newbury to the effect that no funds of the Department of Defense will be spent for basic research. "I can think of no more dangerous course to pursue than to restrict the expenditure of funds for basic research. Any action of this kind is tantamount to saying that we have now arrived at a position in our defense which makes unnecessary any further development of any kind. Obviously this is completely and utterly incorrect."

Newbury insists that the attacks flow from a misunderstanding of the Pentagon change. He replied to Durham that the consolidation "was made to increase and not to diminish emphasis on research." In his reply to the atomic energy committee chairman, Newbury said that the problem arose because much of the research activity and the "hardware" development activity were responsibilities of the same working groups in the two offices, and because the two offices had an overlapping jurisdiction over a large part of the development program. "I have been familiar with this administrative problem for a long time during

Rep. Carl T. Durham,
Sixth District, North Carolina

my engineering experience in industry. It is difficult to give adequate and effective attention to research when both research activity and product development activity are the responsibility of the same working group." He added that it is unfortunate that the situation has been interpreted as a contest between engineers and scientists, or as evidence of a reduced emphasis on research. "Neither engineers nor scientists have 'won a victory' over the other; both, I believe, will be able to do a more important and effective job under the new organization," he added.

Most of Secretary Wilson's press conference following the job shift was devoted to the controversial subject, and the following extracts from his replies to questions may best indicate the Defense Secretary's approach and defense of his move: "The difference between an engineer and a scientist is perhaps not as great as some people try to make out . . . Most scientists are a little more theoretical; perhaps they have delved a little deeper into higher mathematics and written papers on various kinds of advanced thing, but most engineers understand the language of scientists . . . I think there are more important things than who takes the first close-up picture of the moon . . . I don't think the word 'downgrade' (of basic research) is the right word. I think it can be justly said that I favor what is sometimes called 'directed research' as against what some people call 'pure research' . . . I don't under-rate the pure research, because to call some directed and the other pure, divide them into those two categories is what oversimplifies the business, and it's true, though it's not so probable, that you never can tell when a directed piece of research will give you some unexpected results in the pure research side also, or vice versa . . . "

Perhaps the real key to Secretary Wilson's position was his further answer to the effect that if a research project was not of some useful purpose to the Defense Department it ought to be financed in some other budget and not in the Defense Department budget. When he first came to Washington, Secretary Wilson was quoted as saying that it wasn't the Defense Department's business to find out "why grass is green," or "why potatoes turn brown when fried." In short, it wasn't the business of his defense agency to sponsor "pure" research without practical defense application.

This is the real nub of the controversy—not whether basic research is important (which almost everyone agrees it is)—but the extent to which it should be sponsored and by whom. The defense agencies, plus the Atomic Energy Commission, are the ones with the big money and thus the pressure is on them to spend more of their funds for basic research. Originally, the National Science Foundation was intended to be the Government channel for the promotion of basic research, but it hasn't fully worked out that way in terms of total funds allocated. The NSF's annual report for 1956 underlines the fact that ninety-three per cent, or $1.6 billion, of the Federal Government's obligations budgeted to conduct research and development in fiscal year 1954 was for applied research and development. Less than seven per cent, or $116 million, went into basic research. Private industry in 1953 spent $150 million to support basic research in the sciences. For fiscal year 1956 the NSF received a total appropriation of $16 million, of which $9.6 million was expended for support of basic scientific research.

Those in Congress who insist that the Government must do more in basic research might note that the pending appropriation bill for the National Science Foundation, as recommended by the House Appropriations Committee and passed by the House, authorizes $40 million (the same as the current fiscal year) contrasted with the budget request of $65 million.

# *N.S.P.E. Believes*

# THE ANNUAL REPORT

**BY PAUL H. ROBBINS, P.E.**

*Executive Director*

N.S.P.E.


NSPE places great stress upon the individual member as the keystone of professional development. Its pattern of organization has been so designed that the individual member as a part of each level of the three-level organization may have an opportunity to determine those programs and activities of the professional society which will most benefit the profession as a whole and correspondingly each member thereof.

In order that this philosophy may be fully effective, it is imperative that a well-informed membership exist. There are two types of information which are therefore needed by each member. One is complete information concerning the various elements of any problem facing the profession and of concern to the Society, and the second is the necessity for adequate reporting to the membership of programs and activities of the Society.

NSPE spends considerable effort in attempting to meet these responsibilities. As a result, a number of services have been instituted to keep the membership informed of not only the problems which must be faced by the profession, but as complete information as possible on the several aspects of each problem. The members are aware of a number of these publications as indicated in the Subject Listing of NSPE Publications and the monthly issue of the AMERICAN ENGINEER, the *Legislative Bulletin*, the *Engineering Employment Practices Newsletter*, and similar publications.

Because of the wide scope of NSPE's activities and their development over the period of several months, NSPE has considered it important to publish each year an Annual Report in an endeavor to concisely present the year's activities of the Society. This Annual Report must of necessity give only the highlights of the extensive activity of NSPE's numerous committee and extensive officer and staff activity. While NSPE believes that such an Annual Report serves the membership well, it can also serve to acquaint the non-member with the scope and specifics of NSPE activities. Members would do well to pass their copies of the Annual Report on to other interested engineers. It is disturbing to find many engineers not familiar with the programs of NSPE. The Annual Report can serve many engineers if each member will see that it has readership among several of this non-member associates.

It recognized that in many cases members are interested and will wish to receive more detailed information concerning various specific programs of the Society. The officers of the Society are pleased indeed to be receiving a number of requests for additional information as a result of the recently-distributed Annual Report.

Members should avail themselves of other opportunities for securing additional information, on both NSPE programs, and professional problems, through the various other media available to them. The most up-to-date reporting on a number of these items, of course, is carried in the AMERICAN ENGINEER, and specific information is contained in the reporting of the Society's activities which occurs at each of the three national meetings—Spring, Summer and Fall. A number of the state society publications also carry excellent summaries of the three-level program in the reports of the national directors and in the reports of such programs as they are being implemented at the state and chapter level.

Another opportunity is afforded the membership to get first-hand information through attendance at chapter meetings. Much more extensive reporting of national problems and activities is available to chapter officers than is possible to each individual member. Chapter meetings provide an opportunity for these officers to pass on such additional information as they may have, but more important provide an opportunity for members to get together to develop their thinking on these problems and to pass their general observations on to their representatives at the state level. Here again, a composite results in the background necessary for effective presentation of grass roots thinking as the state representatives gather for national meetings.

The various publications of NSPE are meant for member use. A member has merely to express his interest in a particular subject to receive all of the information available as the result of national activity for his personal use and information on which he may base his opinion of the appropriate solution to the many professional problems facing the engineers.

—*End.*

# NSPE Holds Conference at Purdue

THE "State's Role in Stimulating Chapter Activities" was the apt theme which prevailed at NSPE's State Presidents' and Secretaries' Conference, March 7-9, at Purdue University, West Lafayette, Ind.

Designed to cover the broad program of the National Society, the three-day affair attracted representatives of thirty-seven states—all interested in information to aid their organization. All sessions were held in Purdue's Memorial Union.

Following opening remarks by NSPE President Robert J. Rhinehart, the first day was devoted to familiarizing the state leaders with various internal administrative forms and other Society materials at the national headquarters. Executive Director Paul H. Robbins served as moderator for the discussion. An exhibit of state and chapter publications was available for the group to examine.

An informal meeting was held in the evening with representatives of Littell - Murray - Barnhill, Inc., New York publisher representatives, to discuss possible group cooperation in the securing of national advertising for state society publications. General interest was shown in this matter, and material will be submitted by the various interested societies to this firm for further consideration.

The following day, Friday, the morning was devoted to discussions on Educational and Professional Development, presided over by Vice President Clark A. Dunn. Emphasis was placed on the responsibility of the individual chapter in regard to such things as taking an active role in vocational guidance and high school science fairs. In respect to encouraging professional development of young engineers, Leland Hobson, chairman of the Young Engineers Committee, showed several slides indicating the number of young men entering the profession, and their important relationship to professional activities. The need for chapter assistance in helping solve some of the young engineers' problems was stressed.

After regional luncheons, Vice President Warner Howe presided over the Activities Group. Harold A. Mosher, Membership Committee chairman, told of the growth of the society as a whole, and its relationship to the necessity for similar growth in membership programs. He emphasized the chapter's part in stimulating and retaining its members.

The importance of making a 52-week job out of publicity was pointed out in the Public Relations Group presided over by Vice President Lindley R. Durkee. Engineers' Week is an excellent PR agent, the group was informed, but the chapter should be striving throughout the year for higher development.

"Recent Developments in Engineering Education" was the subject of a talk by Dr. G. A. Hawkins, Purdue's dean of engineering, in the evening.

As transportation leaving Lafayette on Saturday afternoon posed a problem for many members, the sessions originally scheduled for that time were held following Dean Hawkin's speech. Vice President Allan H. Kidder presided over the Interprofessional Relations Group which stressed the desirability of closer ties with other professional groups as well as the importance and need for chapters to encourage support and cooperation in the general professional activities in which the chapter is involved.

The Operating and Services Group presided over by Vice President Harry G. Kennedy discussed such things as the choice of chapter committees and finding various leaders to work for the chapter.

Winding up the evening's agenda was a session on Chapter Evaluation presided over by Donald C. Peters, chairman of the Chapter Activities Committee. He presented for the first time material for a new chapter monograph to be released to all chapters called the "Chapter Evaluation and Scoring System." This is a method which has been used in Pennsylvania successfully for the past three years, and is employed to rate the effectiveness of the individual chapter's program.

On Saturday, the Professional Practices Group—under Vice President Garvin H. Dyer—held discussions until noon. Wayne Ault, chairman of the Engineers in Industry Subcommittee, spoke on unionization and brought members up to date in regard to other industry matters. He distributed an "Engineering Employment Practices Conference Kit" which contained a listing of all NSPE developed material which should be helpful to state and chapter committees in the industry field. An Ethical Practices Group presided over by E. K. Nicholson, chairman of the Ethical Practices Committee, dealt primarily with a discussion on chapter enforcement of ethics.

Following all of the group discussions a question and answer period took place which resulted in extensive discussions.

During a closing luncheon, with Henry Estergreen, Indiana Society president, serving as toastmaster, a certificate presentation ceremony was staged. A large number of newly-registered Indiana engineers were given their P.E. certificates by Dennis Stallings, chairman of the Indiana State Board of Registration. President Rhinehart extended the appreciation of the group to all who had made the conference successful. Selections by the Purdue Glee Club were also heard.

**Shown is the Purdue Glee Club which proved a big hit with conference members when they sang at Saturday's closing luncheon.**

# An *American Engineer* SPECIAL REPORT

## *Re: Engineering Enrollments and Degrees in 1956*

● Engineering education statistics recently released by the U. S. Department of Health, Education, and Welfare show that the 1956 engineering freshman class was the second largest in history. The freshman class totaled 77,738, an increase of 6.7 per cent over last year. This may be compared to an increase of 4.9 per cent for all college freshmen.

Total engineering enrollment reached a new all-time high, with an increase of 13.8 per cent over last year, compared to an increase of 8.3 per cent for all college enrollment.

Percentage changes in engineering degrees granted (1955-56 compared to 1954-55) are: bachelor's plus 16.5 per cent; master's plus 5.4 per cent; doctor's plus 1.8 per cent. Estimated changes in all college degrees are: bachelor's plus 14 per cent; master's minus 1.3 per cent; doctor's minus 6.4 per cent.

The following tables from the Government report give the figures in engineering education from 1948-56:

Engineering *enrollment* in higher educational institutions in the United States and its outlying parts, by level: Fall, 1949, to Fall, 1956

| Fall of— | Total engineering enrollment | Enrolled for their first engineering degree | Enrolled for the master's[1] degree | Enrolled for the doctor's degree |
|---|---|---|---|---|
| 1956 | 277,052 | 251,121 | 22,529 | 3,402 |
| 1955 | 243,390 | 221,448 | 18,779 | 3,163 |
| 1954 | 214,414 | 193,692 | 17,441 | 3,281 |
| 1953 | 193,333 | 171,725 | 18,607 | 3,001 |
| 1952 | 176,549 | 156,080 | 17,539 | 2,930 |
| 1951 | 165,637 | 145,997 | 16,765 | 2,875 |
| 1950 | 180,262 | 161,592 | 15,869 | 2,801 |
| 1949 | 219,712 | 201,927 | 15,242 | 2,543 |

[1] Includes other pre-doctoral.

Engineering *degrees* granted by higher educational institutions in the United States and its outlying parts, by level: 1948-49 to 1955-56

| Year | Total engineering degrees | Bachelor's or first engineering degrees | Master's[1] degrees | Doctor's degrees |
|---|---|---|---|---|
| 1955-56 | 31,640 | 26,306 | 4,724 | 610 |
| 1954-55 | 27,672 | 22,589 | 4,484 | 599 |
| 1953-54 | 27,003 | 22,236 | 4,177 | 590 |
| 1952-53 | 28,499 | 24,164 | 3,743 | 592 |
| 1951-52 | 35,013 | 30,286 | 4,141 | 586 |
| 1950-51 | 47,635 | 41,893 | 5,156 | 586 |
| 1949-50 | 58,130 | 52,732 | 4,904 | 494 |
| 1948-49 | 50,415 | 45,200 | 4,798 | 417 |

[1] Includes other pre-doctoral.

# *With Our Members . . .*

***May 16 to 18***

## 1957 Engineering Industries Exposition To Be Hosted by New York State Society

The New York State Society of Professional Engineers will be host to the 1957 Engineering Industries Exposition in conjunction with its annual convention, May 16-18, at the Statler Hotel in New York City.

The Engineering Industries Exposition integrates exhibits in all branches of engineering. It is not limited to one group, service or product. It presents under one roof a wide gamut of services and array of products of engineers in general and includes, in particular, presentations of the recent advances in mechanical, electrical, civil, structural, electronic, chemical, nuclear, aeronautical, marine and industrial engineering.

Among the companies who will exhibit in this exposition are Aero Service, Raymond Concrete Pile, Lock Joint Pipe, New York Traprock, Typhoon Air Conditioning, General American Transportation, Sika Chemical, D. B. Steinman, Borden Metal Products, Cleaver Brooks, H. B. Smith, H. H. Robertson, Koh-I-noor Pencil, Encyclopaedia Britannica and others.

John Lanigan, P. E., of J. P. O'Donnell, Consulting Engineer, and a member of the New York Chapter is the chairman of the Exposition and of the Convention Committee.

### *Valley Forge Chapter Starts Ladies Auxiliary*

The Valley Forge Chapter of the Pennsylvania Society invited their wives in March to meet with them for dinner and after an exceptional Buffet Dinner the men went on an inspection trip of the Keasby-Mattison Asbestos Plant while the ladies organized an auxiliary.

Mrs. John Lilley was made temporary chairman and Mrs. Roy Dangremond, temporary secretary-treasurer. The group decided on a regular meeting night, set their dues and appointed committees to nominate permanent officers and to select a regular meeting place.

### *State Senators Speak On Registration Law*

The March meeting of the Nueces Chapter of the Texas SPE featured guest speakers Senator William S. Fly, of Victoria, and Senator Bruce Reegan, of Corpus Christi.

The Senators discussed the state's proposed new registration law. Senator Fly is the sponsor of the legislegislation.

### *Santa Clara Chapter Hears Overseas Talk*

George August, P.E., field engineer for the American Independent Oil Company of Kuwait, Persian Gulf, spoke on "Problems and Opportunities in Overseas Engineering Employment" at the March meeting of the Santa Clara Valley Chapter of the California SPE.

Traver Smith, chairman of the chapter's Nominating Committee reports the Committee's slate of officers as follows: Morris Viele, president; Wes Lindsay, vice president; Jack Sontheimer, secretary; Frank Belick, treasurer; and Merril Hugo, Harold Meyers, Thelo Perrott, John Boyce, George McKinney, and Richard Blackburn, directors.

The annual meeting of the California SPE will be held May 23-25 in San Jose.

### Oklahoma Annual Meeting

***Top photo:*** **NSPE President Robert J. Rhinehart is shown with officials of the Oklahoma Society during their twenty-second annual meeting in Lawton. Others in the photo are, l. to r.: G. W. McCullough; Roger L. Flanders, outgoing president; Clark A. Dunn, NSPE vice president; Mr. Rhinehart; D. W. Denner, incoming president; D. I. McCullough and W. F. Hilderbrand.** ***Bottom photo:*** **Installation of 1957 officers was held during this meeting. They are, front row, l. to r.: Director H. Henry Jones; National Director W. F. Hilderbrand; Second Vice President George R. Benz; First Vice President William J. Fell; President F. W. Denner; Secretary-Treasurer Sim C. Wright; Past President Roger L. Flanders, and National Director G. W. McCullough. In the back row, l. to r.: Directors J. D. Robertson, W. R. Clarke, Bert J. Thompson, R. P. Witt, D. I. McCullough (1956), Wyatt B. Hendrick, Carl Stevens, J. Ray Matlock and George Downs.**

## *Annual Honor Award To Joseph Wunsch*

Because of his contributions to the field of engineering and for his high professional standards as an engineer and citizen, the Kings County Chapter of the New York State SPE voted to grant its fourth Annual Honor Award to Joseph Wunsch, P.E., president of the Silent Hoist and Crane Company.

This award was instituted four years ago on the occasion of the silver anniversary of the chartering of the Chapter. The award is given to the one selected by a special committee for distinguished service in the field of engineering in general and professional engineering in particular and for exemplary service as a citizen of the Borough, City or State.

Previous recipients of the award have been Dr. James F. Fairman, P.E., vice president of the Consolidated Edison Company and director of the Indian Point Atomic Project; Dr. Erich Hausman, P.E., dean of the Graduate School of the Brooklyn Polytechnic Institute; Monsignor Ronald B. Macdonald, P.E., director of the Brooklyn Diocesan Building office; and the Polytechnic Institute of Brooklyn on its Centennial.

The award was presented to Engineer Wunsch at a dinner and dance on March 29.

Mr. Wunsch is honorary president of the American Technion Society. He has published many technical and scientific articles. He is active in local, national and international philanthropies. He has donated and founded engineering laboratories at the Polytechnic Institute of Brooklyn and at the Technion Institute of Haifa, Israel.

## *Lincoln Chapter Holds Annual Ladies Banquet*

The Lincoln Chapter (covering Lancaster and York areas in Pennsylvania) held their largest Ladies Night Banquet and Dance in March at the Lancaster Country Club with 170 persons in attendance.

President Paul Moore introduced Mrs. Kenneth Rockhold, president of the Ladies Auxiliary and other guests including Secretary John West of the State Society. Chairman George Reinhard and his committee were congratulated upon the exceptionally fine arrangements.

***. . . More state societies news on pages 39 and 11.***

## Travis Chapter Officers

**Charles Novotny (center), manager of the Austin, Texas, Laboratories, Jefferson Chemical Company, has been elected 1957 president of Travis Chapter, Texas SPE. Other officers shown with him are, l. to r.: M. E. Gres of the University of Texas Defense Research Laboratory, chapter director; Martin Wukasch, Texas Health Department senior engineer, chapter director; Kenneth Sandberg, Texas Highway Department office engineer, secretary-treasurer; and Thomas K. Wood, THD senior resident engineer, second vice president. Not pictured are M. D. Shelby, first vice president, and R. L. Schmidt, state director.**

## *Tennessee Chapters Hold Joint Meeting*

The Nashville and Chattanooga Chapters of the Tennessee SPE were joint guests at a banquet and meeting in March, with the Tennessee Tech Student Chapter of TSPE serving as hosts.

James H. Bruce, president of the student chapter, presided at the meeting. Featured speaker for the evening was Karl Stallings, director of public works in Nashville. Everett Derryberry, president of Tennessee Tech, extended a welcome to the group.

**This Paul Bunyan Blue Ox plaque has been prepared as a rotating membership trophy between the adjoining state societies of Wisconsin and Michigan. Each society has won the trophy once.**

## *Jacob B. Zook Named "Engineer of the Year"*

The Erie County Chapter of the New York State Society of Professional Engineers recently honored Jacob B. Zook as "Engineer of the year" for 1956. His record and accomplishments were delineated by Gus Karlsteen and the presentation of the plaque was made by President Earl Schilt.

In celebrating Engineer's Week, the chapter was able, through the offices of Henry Osborne, to obtain the services of Alfred E. Johnson, executive secretary of the American Association of State Highway Officials, as speaker of the evening.

## *Past Presidents Honored By Erie County Chapter*

"The consumption of energy is the yardstick of the standard of living," William J. Borns, technical director of General Laboratories Division, Socony Mobil Oil Co., Inc., stated at a recent meeting.

Mr. Borns, president of the Gloucester Salem Chapter of the New Jersey SPE, spoke at a meeting honoring the chapter's past presidents.

Nine past presidents and members were told of the present resources and trends, and how the future would affect engineers. The past presidents included Elmer A. Hilburger, Charles R. Waters, C. Arnold Dutton, Eugene A. Eldridge, Franklin S. Helfter, Henry F. Sproull, Paul E. Mohn, Norman S. Synder, and Edward J. Nunan.

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***Restricted to Registered Professional Engineers . . . Directory Continued on Next Page***

## *New York State Chapter Offer Services to County*

At their recent meeting, the Nassau County Chapter of the New York State SPE voted to notify County Executive Patterson that they request representation on any committee that is established to create a county college or university.

In addition, the Chapter is offering secondary schools in Nassau County special counseling to students interested in engineering as a career. Members of the Chapter, representing approximately thirty-five different engineering schools and universities, are prepared to answer specific questions about their respective alma maters.

Rounding out the meeting was an interesting talk by George Guido, Jr., an attorney representing the American Arbitrators Association, who described the valuable job being performed by their organization in reducing law suits and subsequently reducing the load on our courts. Mr. Guido also emphasized the shortage of qualified engineers in the field of arbitration.

## Pennsylvania "Presidents' Night"

**"Presidents' Night"—honoring all of the past chapter presidents—was recently held by the Philadelphia Chapter of the Pennsylvania SPE. Among the officials attending the affair were, l. to r.: F. W. A. Myers, immediate past chapter president; John T. West, executive secretary of the State Society; George Kelso, chapter president; L. F. Tierney, State president; Dr. C. C. Chambers, chapter vice president; Howard B. Sheppard, chapter vice president, and Allan H. Kidder, NSPE vice president. State President Tierney spoke briefly on the work of the Pennsylvania Society, after which Oswald Stewart, P.E., associate editor of *Factory Management and Maintenance*, spoke on national trends in industrial plant design and construction. Over 150 persons attended.**

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## *R. B. Alexander Named "Outstanding Engineer"*

Randle B. Alexander, Texas' State Bridge Engineer, has been named "Outstanding Engineer of the Year" by Travis Chapter, Texas SPE. Alexander was honored at an elaborate buffet and dance attended by city and state government officials, the press, and professional engineers from all parts of Central Texas. Holder of degrees from Trinity University and the University of Wisconsin, Alexander was a Lieutenant Commander in the Navy during World War II and is a prominent Presbyterian churchman.

Mr. Alexander

## 1957 North Carolina Officers

New officers of the North Carolina SPE for 1957 are shown during their installation at the annual meeting in Durham. They are, l. to r.: George Rollins, NSPE national director; T. C. Cooke, governor; John C. Bolen, governor; William P. Wells, vice president; H. E. Hicks, governor; Louis E. Wooten, Jr., treasurer, Norman T. Buddine, president, and presenting the gavel, Frank B. Turner, outgoing president.

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# STRICTLY BUSINESS

***Personalities . . .*** **A. M. Anderson** has become associated with the consulting engineering firm of **William H. Byrne,** New York, N. Y. . . . **B-I-F Industries, Inc.,** has appointed **Ray W. Lindsey** as regional engineer (North Central U.S.A.) . . . **Arthur G. Merkle** has been named vice president in charge of engineering for the **Sherer-Gillett Company,** Marshall, Mich. . . . **George W. Hartwell** has been appointed chief engineer, Commercial Refrigeration Equipment, at the **Worthington Corporation's** Holyoke, Mass., Division according to a recent announcement. . . . **A. A. Donatelli** has joined **Stein, Hall & Co., Inc.,** New York, N. Y., as a technical service engineer. . . . **Walter L. Treadwell** has been appointed chief engineer of the **Pacific Coast Engineering Company,** Alameda, Calif. . . . **Samuel J. Green,** president of the **Green Engineering Company** of Pittsburgh, Baltimore, and Boston, announces the appointment of **John J. Mathison** as head of the Sanitary Engineering Division. . . . **M. Nielsen,** executive vice president of **The Babcock & Wilcox Company,** has been elected a trustee of The Bank of New York. . . . The appointment of **Frank Beardsley** as staff engineer for the Automatic Controls Division of the **Clary Corporation,** San Gabriel, Calif., has been announced. . . . **Daniel H. Sheingold** has been named director of applications engineering of the **George A. Philbrick Researches, Inc.,** Boston, Mass.

A. M. Anderson

**Lloyd Williams** has been appointed to the engineering department of the **Behlen Manufacturing Company,** Columbus, Mo. . . . **Harrison A. Storms, Jr.,** manager of research and development, has been named chief engineer of the Los Angeles Division of **North American Aviation, Inc.** . . . The election of **George Stabenow** as vice president in charge of engineering has been announced by the **International Boiler Works Company,** East Stroudsburg, Pa. . . . The firm of **Beasley and Beasley,** Washington, D. C., announces that **Scott A. Heider** is joining its staff. . . . **Dr. Bernard J. Gaffney** has been named New York manager of **The Rust Engineering Company,** Pittsburgh, Pa. . . . The appointment of **Stefan Majde** to the position of consulting engineer of **Burgess-Manning Company, Penn Instruments Division,** Philadelphia, Pa., has been announced. . . . **Wayne L. Gasper** has been promoted to the newly-created post of assistant chief engineer of the laboratory and technical processes at the **Maytag Company's** Plant 2 in Newton, Iowa. . . . Thomas W. Hopper has been elected president of **Day & Zimmermann, Inc.** . . . **Kaiser Engineers Division** of the **Henry J. Kaiser Company** have announced the appointment of **R. J. Wolf** as division manager in charge of engineering design, estimating, and scheduling with headquarters in Oakland, Calif.

Scott A. Heider

**Leroy E. Bonnette** has been named chief engineer of **Denison Engineering Division, American Brake Shoe Company,** Columbus, Ohio. . . . **M. B. Lorig,** vice president, **Panellit, Inc.,** announces the appointment of **G. A. Walley** as chief engineer of its newly-opened Alhambra, Calif., manufacturing facilities. . . . The Board of Directors of the **American Society of Lubrication Engineers** have announced the appointment of **Calvert L. Willey** as administrative secretary for the Society. . . . **Dr. Morton J. Fainman** has joined the staff of the **Cook Technological Center,** Morton Grove, Ill., as executive engineer for the Cobalt 60 project. . . . **The National Board of Fire Underwriters** announces the retirement of **John H. Arnold,** assistant chief engineer of the Chicago office. He has been succeeded by **George Tatnall.** . . . **William E. Diefender** has been named engineering manager of **Hamilton Standards Division, United Aircraft Corporation,** Windsor Locks, Conn. **Thomas B. Rhines** has also been promoted to the position of chief engineer of the Corporation. . . . **Dr. C. M. Vanderwaart** and **Dr. Leon Lazare** have been appointed managers of process design sections in **American Cyanamid Company's** process engineering department. . . . **George B. Waddill,** engineer and land surveyor, announces the appointment of **William H. Mount, Laurence Norcross,** and **Robert B. Powers** as associates in his Lakewood, N. J., office.

Calvert L. Willey

***New Firms . . .*** **S. H. Glassmire** has recently opened offices in Santa Fe, N. M., as a consulting engineer and geologist. . . . The formation of the firm of **Robert J. Freund, Consulting Engineers,** Chicago, Ill., has been announced. . . . **Arthur G. Van Reuth** and **Roland W. Weidner** announce their association for the practice of civil engineering and land surveying as **Van Reuth and Weidner, Inc.,** Baltimore, Md. . . . **Henry J. Wald** announces the formation of a partnership with **Arthur L. Zigas** with the firm to be known as **Wald & Zigas, Consulting Engineers,** Long Island City, N. Y.

***Expansion . . .*** The **General Electric Company** has announced that it will spend $28 million to expand and modernize its Schenectady, N. Y., facilities this year. Expansion plans for the plant, largest and oldest in the Company's system, were announced by **James M. Crawford,** vice president and general manager of the Motor and Generator Division, and **William S. Ginn,** vice president and general manager of the Turbine Division. . . . **Alwac Corporation,** formerly known as Logistics Research, recently occupied two new buildings in Hawthorne, Calif. The move marked the Company's fourth expansion within a year, according to **A. Y. Baker,** executive vice president and general manager.

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# Testimony

(*Continued from page* 20)

when Army officers are assigned to duties involving the performance of professional work, they shall possess qualifications equal or similar to civilian members of that profession. These examples are intended to convey only the general sense of Congress in recognizing that professional activities stand in a different position and require administrative treatment distinguished from that accorded business or commercial pursuits.

The consulting professional engineer does not sell the paper upon which his plans, drawings and specifications appear. He sells his individual skill and knowledge based on specialized professional training, and his skill and knowledge are manifested in the advice or recommendations which he furnishes his client according to the circumstances. His plans and drawings are merely the tangible evidence of his intangible service. The same is true of other professions. Judge Learned Hand in *Bozant v. Bank* of New York, 156 F. 2d 787, declared: "A lawyer who in the course of his practice writes letters, or draws deeds or wills, or prepares briefs and records, is not on that account within S. 203 (j); and the same is true of the correspondence of a broker and of a banker. . . . (I)t would be unreasonable to the last degree to suppose that Congress meant to cover such incidents of a business whose purpose did not comprise the production of 'goods' at all." In *Washington Times Herald, Inc. v. District of Columbia*, 213 F. 2d 23 (1954), wherein the District sought to levy a use tax on the purchase by the newspaper of comic strip mats, the Court declared: "Sales to the newspaper of comic strip mats with the right to reproduce them one time, were sales of professional and personal services of the artists . . . The price was paid for the artists' work, not for the mats themselves. The newspaper bought the creation of the artist—not the material on which it was impressed . . ."

Thus, court decisions have held that the rendering of professional services is entitled to different considerations than the ordinary business or commercial enterprise. Congress has recognized this distinction, and in the past, has sought to legislate accordingly. A departure from this course of treatment is inappropriate now.

The basic nature of the rendering of professional services furnishes another reason for a determination that such activities should not be covered by the Wage-Hour Act. By and large, the work level of a professional tends to be sporadic and irregular. There are "peak" periods and "slack" periods. Past experience, trends, and seasonal cycles have no business planning value to the professional as they do for the commercial enterprise. The professional must be able to meet the needs of his clients whenever and under whatever conditions they might arise. Consequently, flexibility of time is essential to the professional and his staff. During certain periods if "overtime" is required, the professional and his staff work "overtime." When the work load falls, the staff compensates for the "overtime" by attending to purely personal matters or by later arrivals or earlier departures. This situation is expressly recognized by the Wage-Hour Administrator in his Regulations. Section 541.3 which defines "professional" employees declares, among other criteria, that a professional employee is any employee whose work "is of such a character that the output produced or the result accomplished cannot be standardized in relation to a given period of time . . ."

To require professional consulting firms to adhere to the overtime provision and to require extensive record keeping for this purpose creates an unnecessary and unjustifiable burden on the professional firm.

It should be pointed out for the record that in each of the three cases mentioned above which considered the applicability of the Wage-Hour Act to consulting engineers, the defendant firms were prosecuted for alleged violation of the overtime provision of the Act, and not for violation of the minimum wage provision. The problem con-

cerning overtime payments and the consequent record keeping is a real one and should be rectified. The question as to whether consulting engineering firms are covered by the minimum wage requirements is relatively immaterial for, as a general rule, firms which render a professional service must pay at least the minimum wage and in most instances higher than the minimum to acquire and retain the higher calibre of personnel required. As stated by Judge Chesnut in the *Turpin* Case, "Again the nature of the work performed by the defendants' employees (draftsmen, field men and stenographers) was mental rather than manual and of a professional rather than a commercial character."

Secretary of Labor Mitchell in his recent statement to this subcommittee recognized that the application of the overtime provision presents peculiar and serious problems for many of the business enterprises which would be covered under his recommendation. The National Society of Professional Engineers is of the opinion that the overtime provision presents peculiar and serious problems also to those firms not mentioned by the Secretary, and that the question as to the applicability of this provision to professional firms can best be resolved by Congress expressly excluding such firms from the Act's coverage.

As originally written, the Wage-Hour Act applied to employees working in any process or occupation *necessary* to the production of goods for commerce. Giving this "necessary" clause a liberal construction, the courts held the Act applicable to many employees whose activities were only indirectly related to the actual production of goods for commerce. The Act was amended in 1949 by the 81st Congress. In the amendments the *necessary* clause was deleted and replaced by a provision which held the law applicable to any employees engaged in any "closely related process or occupation directly essential" to the production of goods for commerce. Under this more stringent requirement for coverage, many employees were excluded who were formerly brought under the Act by the "necessary" clause. The change, however, has not fully clarified the question of coverage of those firms which rendered professional services.

Although such activities must now be more closely related or directly essential to the production of goods for commerce, the meaning of "closely related" and "directly essential" in connection with professional services is still subject to varying degrees of interpretation. Can it rightfully be asserted that the work of the consulting engineers' draftsmen, stenographers, etc., which is incidental to the consulting engineers' furnishing of professional advice and plans for the construction of a building, be construed as "closely related . . . or . . . directly essential" to the problematical production of goods for commerce in that building? We believe that the answer is unequivocably no. The work of these employees relates only to the preparation of plans and specifications for a building or facility which may or may not ever be built. If built, it may or may not be used for the production of goods for interstate commerce; and if so used, the building is merely the housing for the manual or mechanical work by which these goods are produced. Thus we think it clear that if such activities are related to the production of goods for commerce, the relationship is *remote* and not "closely related" or "directly essential" as the Act now requires.

As declared by Judge Chesnut in *McComb v. Turpin:* "(I)t seems clear that the intent of Congress was to provide maximum hours of work for those working employees who were *closely* and not *remotely* engaged in the production of goods for commerce."

According to some of the amendments recently proposed, the present coverage test of "closely related" and "directly essential" would be revoked and replaced by the original "necessary" clause. Furthermore, the maximum hours provision would be extended to the employees of any employer who is engaged in "any activity affecting commerce." Such broad and liberal application of the Act would serve only to compound and confuse the question as to whether employees of professional consulting engineers, lawyers or architects would be covered. Whether employees of these professional firms are engaged in pursuits "necessary" to the production of goods for commerce or whether the employers are engaged in "any activity affecting commerce" can only be determined by future costly litigation. Such extremely broad and liberal coverage of professional pursuits is not within the true spirit and purpose of the law, for such activities are not within the mischief to be remedied.

In conclusion, it is the opinion of the National Society of Professional Engineers that the most practical, long-lasting and effective solution to the problem of coverage of professional activities is to amend the Act so as to expressly exclude such coverage. **End.**

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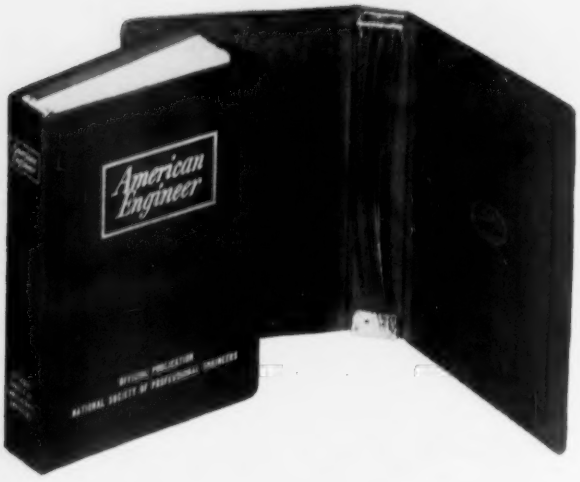


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## Moxon

(*Continued from page 19*)

literature and language which means communications, of psychology, which means motivations and customers' requirements. Many of the engineering schools are now recommending a broad two or three year course in what has become popularly known as the "humanities," prior to specializing in any particular field of engineering or science.

My own college requires three years of liberal arts work prior to entry into the engineering school, and while the latter is one of the smaller and least well known schools of its kind it has produced some highly successful engineers.

Dean Dunning of the Columbia School of Engineering in New York has stated that many young engineers expect too much too soon, feeling that their scientific training should be the answer to all their problems. He apparently agrees with my thesis that it takes more than training. Dean Dunning also remarked, in connection with our tendency to overrate training, that the present position of the teaching profession is an illustration of this fallacy, with prospective teachers spending four years learning how to teach and frequently spending no time on what to teach.

I firmly believe the engineer will have no real trouble getting both recognition and money from management, for his projects or for himself, if he constantly keeps in mind that he is not a separate and different kind of person from everybody else; that his problems are unavoidably part of everyone's problems and can only be solved in context; and that, for the most part, the men and women who have risen to top positions in business, and industry and government did not and, in the future, will not come from any one field of endeavor.

American management and, I hope, government will continue to call for its leaders on lawyers and accountants, on salesmen and engineers, on bankers and ad men; in short on those people who combine education and experience with breadth of view and an ability to plan with others for the future in a constantly changing world. And, under these circumstances, I don't believe engineers, who can meet these requirements will fail to get for themselves a goodly share of the vast responsibilities which lie ahead.—**End.**

# SUBJECT LISTING OF NSPE PUBLICATIONS

**(Unless otherwise indicated publications listed below are FREE and may be obtained by writing to the National Society of Professional Engineers, 2029 K Street, N.W., Washington 6, D. C.)**

### CHAPTER ACTIVITIES

Monographs outlining various chapter functions have been prepared for the use of chapters: **Helping the Young Engineer, Ladies Auxiliaries, Promote Ethical Practice, Chapter Publications, Functional Group Activities** and **Meetings, Fellowship** and **Attendance.**

**Welcome Mr. President**—An informative booklet outlining organizational functions and suggestions for chapter presidents.

Indoctrination Conference for Chapter Officers and Committees.

**Public Relations**

**Education—Key to the Future**

**Chapter Evaluation and Scoring System**

### COMMUNICATIONS

***How to Improve Engineering-Management Communications**—Executive Research Survey Number One. Based on a survey of more than 300 companies employing engineers, this report contains information on engineering-management relations with respect to the lines of communication between engineers and management. Price $1.00 (members).

### COMPETITIVE BIDDING

**About Competitive Bidding**—Reprint from American Engineer (NSPE Believes).

**Competitive Bidding for Professional Services**—NSPE Professional Policy Statement.

**Recommending Procedure for Negotiating Engineering Contracts**—NSPE Professional Policy Statement.

### CONSULTING ENGINEERS

**So You Want To Open a Consulting Office**—Series of articles dealing with problems faced in opening a consulting office: By Way of Qualifications—John B. McGaughy, P. E.; Operating Your Practice—Alfred J. Ryan, P. E.; Ethical Problems—Francis S. Friel, P. E.; Reprints from American Engineer. 20¢ each article—3 for 50¢.

### CORPORATE ENGINEERING PRACTICE

**Corporate Professional Practice vs. Individual Professional Practice**—The Special Committee on Registration Law, NYSSPE. Reprint from American Engineer.

**Should Corporations Practice Engineering?**—Ronald B. Smith, P. E. and V. George Terenzio, P. E. Reprint from American Engineer. A discussion of the pros and cons of the issues involved in the debate over corporate practice of engineering.

### CREED

Engineers' Creed—Suitable for distribution—free; for framing—50¢ each.

### ETHICS

**Canons of Ethics**—Suitable for distribution—free; for framing—50¢ each.

### FEE SCHEDULES

**Recommended Grades, Duties, Responsibilities and Qualifications for Pre-Professional and Professional Positions**—Adopted by NSPE June 1952.

**Report on Fee Schedules**—Revised October, 1954. A study of the Salary and Fee Schedule Committee of NSPE bringing together various schedules of fees and related practices of engineers in the consulting field.

*Order from and remit to Professional Engineers Conference Board for Industry, 2029 K St., N.W., Wash. 6, D. C.

### FUTURE OF ENGINEERS

**Engineers for the Future**—Reprint from American Engineer (NSPE Believes).

**If I Were a Young Engineer Today**—Reprint from American Engineer.

### GOVERNMENT

**Engineers in Federal Government**—Reprint from American Engineer (NSPE Believes).

**Our Function in Governmental Liaison**—Reprint from American Engineer (NSPE Believes).

**Engineers in the Federal Government**—Reprint from American Engineer (NSPE Believes).

**Policies Pertaining to Outside Practice by Professional Engineers Employed by Agencies of the Federal Government**—Report by the Engineers-in-Government Subcommittee, Employment Practices Committee, covers policies of Federal agencies and establishes NSPE policy.

### INDUSTRIAL RELATIONS

**A Professional Look at the Engineer in Industry**—NSPE Engineer-in-Industry Committee. A major publication of vital importance delving into all phases of the professional and economic status of that group which comprises the largest number of engineers in any functional field. Price $1.50 (members).

**Professionalism or Unionism—Facing the Issue**—Past President T. Carr Forrest, Jr., P. E. A discourse on the aspects of unionism for the professional. Reprint from American Engineer.

**The Professional Engineer in Industry**—Reprint from American Engineer (NSPE Believes).

**The Professional Union—A Contradiction**—Past President Clarence T. Shoch, P. E. A discussion of the development of engineers' unions and the reasons why unionism is incompatible with professionalism.

**Criteria for Professional Employment of Engineers**—Adopted by NSPE June 1956. 25¢ each.

**Engineering Employment Practices Newsletter**—Published monthly by NSPE; available to members upon request.

**Engineering Team (The)**—Reprint from American Engineer (NSPE Believes).

**Professional Responsibility vs. Collective Bargaining**—NSPE Professional Policy Statement.

### LEGISLATION

**Legislative Bulletin**—Published monthly by NSPE; available to members upon request.

### MANPOWER

***How to Attract and Hold Engineering Talent**—Executive Research Survey Number Three. This report reflects the experience of more than 200 companies which employ engineers and attitudes of 1,400 individual engineers who are employed in industry. Price $1.00 (members).

***How to Improve the Utilization of Engineering Manpower**—Executive Research Survey Number Two. This report pools the experience of more than 195 companies employing engineers on the subject of utilization of manpower. Price $1.00 (members).

### MEMBERSHIP PROMOTION

**Every Man a Debtor**—Sixteen-page booklet explaining NSPE organization, programs, activities and objectives.

**Membership Kit**—This kit is available to membership chairmen and contains a general outline of membership campaign techniques and sample materials. Any of the publications listed in this outline are generally available for distribution to membership promoters as membership mailing pieces.

### NSPE PHILOSOPHY

**Engineering Societies of America**—Paul H. Robbins, P. E., executive director, NSPE. Describes organization, programs, activities and objectives of NSPE. Reprinted from G-E Review.

**Is Our Registration Requirement Limiting Membership?**—Reprint from American Engineer (NSPE Believes).

**Why a Professional Society?**—Reprint from American Engineer (NSPE Believes).

### NATIONAL SECURITY

**Engineering Profession in National Security (The)**—NSPE Professional Policy Statement.

### ORGANIZATION

**Model Constitution for Ladies Auxiliary Chapters.**

**Model State Society Constitution.**

**NSPE's Constitution and Bylaws.**

### POLICIES, NSPE

**Professional Policies**—Compilation of all present NSPE policies as adopted by the Board of Directors.

### PROFESSIONAL DEVELOPMENT

**Professional Development—The Responsibility of Industry and the Engineer**—Conference Proceedings of 1955 meeting devoted to a discussion of the engineer in industry. (Price $1.00 members).

**Professionalism in Industry: The Dow Story**—Case history of professionalism in industry. Reprint from American Engineer.

### PROFESSIONAL DEVELOPMENT

Conference Proceedings, Atlantic City, 1956

**Management—Professional Employer Relations—Professional Status of Engineers in Government Employment.**

**Teaching Professional Concepts in Our Engineering Schools.**

Programs for Professional Development

**Need for More Effective Professional Action (The)**

**NSPE's Development of Professional Objectives**

**Professional Development of Engineers and Scientists in Industry (The)**

**Dupont's Engineering Department Takes a Forward Look at Professional Development**—C. H. Evans, P. E. Reprint from American Engineer.

### PROFESSIONALISM

**How a Professional Attitude Can Be Instilled in Engineers**—Dean W. R. Woolrich, P. E. Reprint from American Engineer.

**Some Thoughts on Engineers and the Engineering Profession**—Speech by Harry A. Winnie, P. E., vice president, General Electric Co. (Retired), presented at the 20th Annual Meeting of NSPE.

**Significance of the PE Emblem**

### PUBLIC RELATIONS

**Engineers' Week**—Reprint from American Engineer (NSPE Believes).

**Our Public Relations Responsibilities**—Reprint from American Engineer (NSPE Believes).

**There's Nothing Wrong With Engineers** Reprint from American Engineer.

**REGISTRATION**

A Model Law for the Registration of Professional Engineers and Land Surveyors

**Is Our Registration Requirement Limiting Membership?**—Reprint from American Engineer (NSPE Believes).

**Next Step Registration** — Informative pamphlet for engineering students and others on values and procedure for engineering registration.

**Registration: Then, Now and Tomorrow** —Frank H. Prouty, P. E., chairman, National Bureau of Engineering Registration. Reprint from American Engineer.

**Professional Engineering Registration Laws**—A compendium compiled by Alfred L. McCawley in cooperation with NSPE. Available from A. L. McCawley, Box 474, Jefferson City, Missouri—$8.75.

**SALARY SURVEY**

**Digest of 1956 Salary Survey**—Pamphlet highlighting the full report.

**Professional Engineers' Income and Salary Survey**—1952-1954-1956 statistics covering NSPE members—50¢ each (members).

**STANDARD FORM OF AGREEMENT**

**Standard Form of Agreement Between Owner and Engineer for Professional Services**—Price—5¢ each.

**TECHNOLOGY**

**The Case for Technology**—Brig. General David Sarnoff. A factual answer to those who believe that the path of technology could lead to ruin. Reprint from American Engineer.

**TRAINING**

***How to Train Engineers in Industry**—Executive Research Survey Number Four. This report reflects the experience of more than 200 companies which employ engineers, as well as of many individual leaders in the training field. Price—$1.00 (members).

**UNITY**

**Unity for Professional Action** — Reprint from American Engineer (NSPE Believes).

**Professional Organization of Engineers**—Reprint from American Engineer.

**VOCATIONAL GUIDANCE**

**Annotated Vocational Guidance Bibliography** — Listing of current pamphlets and books of interest to counselors and prospective engineering students.

**Do We Have Enough Engineers?** Reprint from American Engineer (NSPE Believes).

**Engineering . . . A Career of Opportunity** —A general vocational guidance pamphlet.

**Engineers for the Future**—Reprint from American Engineer (NSPE Believes).

**List of Accredited Engineering Schools**—Reprint from ECPD Annual Report.

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## Letters

*(Continued from page 4)*

our engineering colleges. Our need for men and women proficient in the arts and sciences is great. The demands on technology and science are so vast that we could not continue without a greater influx into the professions. With such a shortage of men most needed in the technological field, it should be easy to convince anyone that America is in danger.

Why is there such a lack? What is responsible for the insufficiency of men who ought to be in these essential fields? The answer is the old economic factor. When one has to pay twenty-six cents for a loaf of bread; fifteen cents for a cucumber, twenty-one cents for a green pepper; and thirty-six cents for a pound of tomatoes, then salaries in every branch of endeavor must be revised. You can see that it takes money to live and unless a job or profession offers a reasonable salary, a decent living wage to meet the high cost of living, then people turn elsewhere. Consider the many engineers who have left our colleges because they can make so much more in the business world. I know numbers of splendid engineers who would have loved to continue in their chosen profession but they found it impossible because of their duties to their families. You cannot expect engineers to continue their studies and work at a tremendous financial sacrifice which deprives the engineer and his family of the common decencies of life. It seems to me that the financial impoverishment of the engineer is a national disgrace. Surely, a nation that can spend hundreds of billions on armaments, can afford to divert one billion to better the economic life of those who invent, design and supervise the production of such armaments. As soon as we possibly can, we must reward the many in the engineering profession with adequate remuneration and with that prestige and respect which rightfully belongs to them. I do not wish to minimize other walks of life. I do ask that all fields of endeavor which go to better the life of our people and the strengthening of our government, should receive a measurable degree of interest and proper recognition.

William Crepea, P.E.,
Brooklyn, N. Y.

## *P.E.'s and Contractors . . .*

Dear Editor:

The letter of Robert Hodgins, EIT, of San Diego, California, published in the February issue of the American Engineer, makes some broad generalizations and asks some searching questions. I do not share his opinions but I respect him for his questions and I should like to try to answer them.

There are many facets to the modern field of engineering, and the closer we, as individual engineers, stand to any particular facet, the larger it looks. Conditions of design, construction control, change order practices, and specification writing, may vary greatly between even adjoining facets, to say nothing of those not closely related. The facet that "looks big" to the undersigned is highways—surveys, design, construction, and maintenance; quite representative.

Here, the type of work done by the designer of yesterday or a generation ago does not differ noticeably from that done today; and the inefficiency in the use of the engineer, negligible before World War II, has almost vanished since then, due to a well-planned personnel policy. The opinion of the design engineer, in our field, as to the perfection of work sought by the contractor, is not relevant. After many years spent on inspection and supervision of inspection of construction work performed by contractors, the undersigned has to confess that he never knew a contractor who sought perfection, yet he knows many honest contractors. Their aim is to do *satisfactory* work. Work in our field is either satisfactory or unsatisfactory, and the dividing line between is usually quite thin. The one will be accepted and *may* show a profit to the contractor, the other must be torn out and rebuilt and will result in a loss.

Let the young engineer not be dismayed by the above. It is clarified by a definition of terms. Plans and specifications must be exact in such details as crown, grade, alignment, materials used, material mixes, etc. All these, and much more, are set up by plans and specifications, including an important factor about which the engineer learns very early—tolerances. A bridge with one trestle piling one inch out of place is imperfect but not unsatisfactory. The utmost skill of the inspector and crew foreman could not keep the piling in place during driving, but the bridge will not be second-rate, as a result. We, as engineers, know that the piling, though "an inch too far toward Joneses" does not materially impair the value of the structure, and we accept it, because our specifications wisely provide that much tolerance, in a compromise with the intolerable cost of perfection. The public cannot afford the cost of perfection, in minute detail, of its highways. Adherence to plans and specifications, *within the tolerances specified*, will assure a product within bearable cost, and meeting predetermined standards of strength and durability.

The contractor, usually not personally present on his work, however personally honest, is only as capable and trustworthy on the job as the least capable and trustworthy man he hires. The contractor's skill is only the skill of the workmen he hires, and they are under the compulsion to "get production." A very few inspectors, or even one, knowing all the specifications involved, and possessing excellent knowledge of the maximum capabilities of men and machines on a job, can secure highly satisfactory work, while the contractor's foreman and all his men can concentrate on production, and thereby keep the cost within tolerable limits. In this State, personal trust is not lacking between engineers and contractors, and in the field, between inspectors and well-known foremen or other key employees, mutual trust and confidence are often evident and well placed.

The writer has no experience of the near-chaotic conditions due to overlooked items of work such as Mr. Hodgins describes (could Mr. Hodgins' particular field be aircraft electronics design?) but ventures the guess that it is not a wide-spread evil, or one that will be long tolerated in his particular field. In our field, unforeseen or unforeseeable changes or even new items of work occasionally become necessary during construction. These are easily and equitably provided for by the change order, the agreed price, or as a last resort, by force account work, by whatever terms they may be known locally.

In conclusion, the writer recommends to Mr. Hodgins the retention of his inquiring attitude and his thoughtful questions. The writer sees no evolution of engineering and construction, only an extraordinary progress in which technology and related experience are nowhere, except in the field of medicine, so effectively teamed. Engineering, in all its fields, is a continuing frontier to the technologist. He and his brother in the field of medicine are now many generations ahead of their time, as compared to the present in politics, economics, and law. These sciences have "dragged their feet" for hundreds of years. No other science is within hailing distance of the engineer in his effort to show Man his earned delivery from his first curse "By the sweat of thy brow shalt thou eat bread."

Carl C. Wilkinson, P.E.,
Sikeston, Mo.

# ...NEW LITERATURE...

*To help the offering firms determine which literature you require, when requesting an item, be sure to list all specifications shown . . . and say you saw it in the AMERICAN ENGINEER.*

**PORCELAIN PANELS**—A 20-page reference catalog on architectural porcelain panels is offered by Davidson Enamel Products, Inc., Lima, Ohio. Current applications in curtain-wall construction and facing panels are shown both in photos and installation drawings. Examples of structures that have been remodeled are also illustrated. Complete detail drawings and specification data are given. An "idea" book for architects, engineers, contractors, and owners. For your copy of the 1957 Edition of the Davidson Sweet's Catalog insert, write Davidson Enamel Products, Inc., Dept. AE, 1104 East Kibby St., Lima, Ohio.

—AE—

**WIRE PARTITIONS**—The modern, economical approach to plant layout problems is described and illustrated in an 8-page bulletin on WIPCO Wire Partitions and Custom Partitions. Some of the features of WIPCO Standard Partitions catalogued in the bulletin are: easy installation — each panel is a complete unit, interchangeable and moveable, and can be quickly assembled and installed by plant workmen; versatility and adaptability—the panels are reusable, and can be disassembled and relocated as plant layout changes require. Also described, are WIPCO Custom Partitions, developed to meet the requirements of special enclosure and partition applications. Specification data are listed in table form for easy reference. Bulletin P-55 available on request by writing Wire and Iron Products, Inc., 1725 Sixteenth Street, Detroit 16, Mich.

—AE—

**CAPS AND FILLER NECKS**—Of interest to manufacturers of any type of machinery requiring a fuel tank is a new illustrated 16-page brochure on "Easy-On" caps and filler necks just issued by the Stamping Division of Eaton Manufacturing Company. The booklet provides simplified but concise engineering data for various fluid tank installations with illustrations of the seven standard sized caps and fillers (including pressurized) now available in stock for immediate delivery. Specialized caps of any design can be manufactured by Eaton upon request. Copies of the new booklet and additional information can be obtained by writing the Eaton Manufacturing Company Stamping Division, 17877 St. Clair Ave., Dept. R, Cleveland 10, Ohio.

—AE—

**PLASTIC MOLDING** — A brochure has been issued by Penn-Plastics Corp. outlining the firm's facilities for compression, injection and transfer molding, low pressure reinforced casting and complete assemblies. The equipment listing incorporates several new presses installed during the company's recent expansion program. Also pictured in the brochure are products custom molded by Penn-Plastics in a variety of materials. Copies of the brochure may be obtained by writing to Penn-Plastics Corp., Fairhill and Tyson Avenues, Glenside, Pa.

**STORAGE BATTERIES**—To help engineers evaluate the practicability of miniature Nickel Cadmium Batteries for switchgear, diesel engine starting and portable electrical equipment—NICAD's high output sintered plate nickel cadmium storage batteries are described in an eight-page technical report. Details of development, construction, and operation are shown along with curves of discharge and charge characteristics. The report may be obtained from Nickel Cadmium Battery Corp., 66 Pleasant St., Easthampton, Mass.

—AE—

**CREATIVE ENGINEERING** — Featuring case histories of actual consulting jobs done for the jet engine industry, a new brochure offered by Winslow Manufacturing Co., describes that company's "creative engineering service for precision metalworking plants." Winslow engineering service covers everything but the actual design of the product and its manufacture. Winslow does the experimental work and process development, then designs and builds the necessary special tools and machinery. Gaging procedures are set up with standard or specially created gages for the greatest efficiency and accuracy controls. Equipment is specified and floor-planned. Copies of "The Winslow Story" may be obtained by writing Winslow Manufacturing Company, 1751 East 23rd Street, Cleveland 14, Ohio, or 14918 Victory Blvd., Van Nuys, Calif.

—AE—

**STAINLESS STEEL HONEYCOMBS**—To assist structural and design engineers, as well as purchasing agents, to broaden their knowledge of the new field of stainless steel honeycombs, the Engineering Research Department of the American Silver Company, Flushing, N. Y., has prepared a comprehensive bibliography of source material. It can be obtained from Technical Editor, American Silver Company, 36-07 Prince St., Flushing 54, N. Y. The bibliography gives the titles and publication references of articles published since 1950 on: fabrication, assembly, welding, brazing, testing, designing, engineering, and other aspects of stainless steel honeycomb technology. It also contains titles of publications in this field, gives addresses and instructions for their procurement.

**FLOOR FORMS**—Newly published is an 8-page catalog on the subject of Spanall, registered trade name of the pre-stressed all-metal horizontal shoring, now available throughout the United States, Canada and Latin America, for all types of beam and slab concrete forms. The catalog contains descriptions of the product, including all essential engineering and application data. Detailed isometric drawings and two pages of photographs illustrate typical installation techniques. A valuable feature on the back cover of the catalog is the pair of reference charts which help the builder quickly determine (1) the most economical combinations of Spanall sections to attain various span lengths, and (2) the correct relationships between slab thickness, weight-of-slab, length-of-span and spacing between supports. The new Spanall catalog is offered by Spanall of the Americas, Inc., 787 United Nations Plaza, New York 17, N. Y.

—AE—

**CASE HISTORIES** — Four new engine case histories have been published by the Le Roi Division, Westinghouse Air Brake Co., Milwaukee, Wis. This brings to eight the total number of engine case histories published recently by the firm. The two-page case histories use pictures and drawings to illustrate applications of Le Roi modern V-8 and V-12 engines of 540 to 4,000 cu. in. displacement. Applications described in the case histories include: air conditioning, gas boosting, cotton ginning, irrigation, generator sets, oil well pumping, and oil well drilling. The new literature may be obtained free by writing the Sales Promotion Department, Le Roi Division, Westinghouse Air Brake Co., Milwaukee 1, Wis.

—AE—

**COLOR SIGNALING**—A 16-page bulletin, entitled "Color and Transmission Properties of Sharp Cut-Off Red Gladd Filters at Elevated Temperatures," has been published by Kopp Glass, Inc., Swissvale, Pittsburgh 18, Pa. The data contained in this bulletin are of importance to all engineers and laboratories interested in color signaling. A copy of the bulletin will be mailed upon request.

—AE—

**NEW DUST CONTROL**—Effective control of dust in metal and non-metallic mines is described in a brochure published by The Johnson-March Corp., Philadelphia, Pa. The bulletin specifically describes performance and advantages of a system known as Chem-Jet which suppresses dust at its source. Points of application are illustrated including the truck dump, crushers, screens, bucket elevators, conveyor transfer points and ore docks. Essential equipment used with the system is also explained and illustrated, as is a specialty hydro-precipitator scrubber recommended for handling low micron dust particles. The brochure goes into the Compound M-R surface active agent applied in the operation, telling briefly how it works. A closing reference to the firm's engineering services on any dust problem is also included.

*These listings are informational only and are not an endorsement of the products, nor of the manufacturer's claims.*

# What's New

**This column describes new products of general interest to professional engineers. For further information, circle the item number on opposite page and mail to the AMERICAN ENGINEER.**

***These listings are informational and are not an endorsement of the products, nor of the manufacturer's claims.***

## PLASTIC PANELS — Item 30

A new line of glass fiber-reinforced plastic panels featuring embedded aluminum or steel diamond mesh has been announced by the Resolite Corporation. The metal-reinforced translucent panels offer unusual architectural design possibilities as well as semi-transparent protection against flying particles and liquid spray. They may also be used for protective skylights, and windows.

## CONCRETE BATCHING PLANT — Item 31

A new concrete batching plant produces over 300 yards per hour with one operator in a 1-stop or 2-stop set-up. The plant, designed especially for the road building program, obtains its high capacity through a unique system of weighing 3 materials for a single batch at the same time . . . sand, coarse aggregates, cement. It batches accurately to rigid specifications and supplies 2 or 3 dual drum pavers.

## SMALL CALCULATOR — Item 32

For anybody who works with figures the Controller is a automatic calculating device for all commercial and technical calculations. All metal, aluminum, construction. Weight only 1 ounce with case. Does not wear, break or rust. Not affected by climatic conditions. Performance of a 10 inch slide rule, but fits into your pocket. Three inches in diameter.

## CONCRETE FORM — Item 33

A new concrete form method which completely eliminates conventional studs and walers has some contractors reporting form work going twice as fast with the new method. It is designed to provide a sturdier, more easily constructed form for application on all types of industrial, commercial and residential forming as well as in bridges, reservoirs, culverts and manholes.

## WATER BLADE — Item 34

An accessory for the compaction of hot mix asphalt has been added to the Jay 12 line to fill the need for patching of streets, cross cuts and hard to get at places. Designed to completely eliminate sticking and pickup of material this blade spreads an even flow of water over the tamping shoe area and is controlled at will by a foot lever while the machine is in working position.

## STRAIGHT EDGE — Item 35

An easy-rolling straight edge for rapid detection of high or low places on forms and pavement slabs has been developed by the Viking Manufacturing Co. The Viking "Hi-Lo Detector" dye marks slab areas not within specification. The Hi-Lo is lightweight, consisting of a 10-foot aluminum beam which rolls on precision ball-bearing, aluminum rubber-tired wheels.

## PRESSURE RESIN SPLICE — Item 36

Splices shot from a gun—new versatile method of protecting and insulating electrical splices with epoxy resin injected into a mold tailor-made in the field. Called the "Scotchcast" resin pressure splice, the new method is expected to be useful to utilities and power companies, electrical contractors and communications concerns for both buried and aerial cable. Lead, rubber and plastic sheathed cable as well as shielded cable can be spliced.

## SOIL COMPACTION MACHINE — Item 37

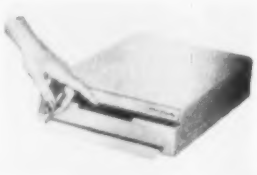
A new mechanical soil compactor eliminates the tedious hand compaction process and produces uniform results with a considerable saving of time. The compaction test is performed to determine a soils moisture-density relationship and the maximum density to which a construction fill or subgrade material should be compacted.

## SAFETY LADDER — Item 38

A new, easy-to-lock line of ladders from 8 to 12 steps, that roll easily to any location for reaching high places safely has been developed by Tri-Metal Ladder Co. This line of Safety-Step Ladders has a new, simple-to-operate locking feature that raises casters and lowers the front legs of the ladders, locking them securely to the floor to prevent tilting, swaying and slipping.

## ELECTRIC PAPER DISPENSER — Item 39

The American Photocopy Equipment Co. is now in production on an electric, automatic paper dispenser to be used in conjunction with their photocopying machine, or with other photocopy equipment. Called the Apeco Eject-O-Matic, it protects photocopy paper from light exposure and automatically ejects one sheet of paper at a time with just a touch of the electric ejector bar.



# American Engineer

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# How about treating your family to a better chance against cancer?

You give your family the best of everything . . . all-day outings in the car, maybe a movie after, and then a soda to top it all off. There's really nothing you wouldn't do to make your family happy.

And if you could help make them safe . . . safe against cancer, you'd do that too, wouldn't you? And fast. Well, you *can* help. The American Cancer Society needs your dollars right now. It needs them for research, which is making important gains against the killer. For education, which gives everyone life-saving facts about cancer. For service, which aids and comforts the stricken.

Don't skip the treats that make life pleasant for the family. But don't skip the chance to strike back at a disease that threatens them. Match the cost of that next outing with a check to the American Cancer Society. That's the most worth-while treat you could give! Send your check to "Cancer" in care of your local Post Office today.

**AMERICAN CANCER SOCIETY**